

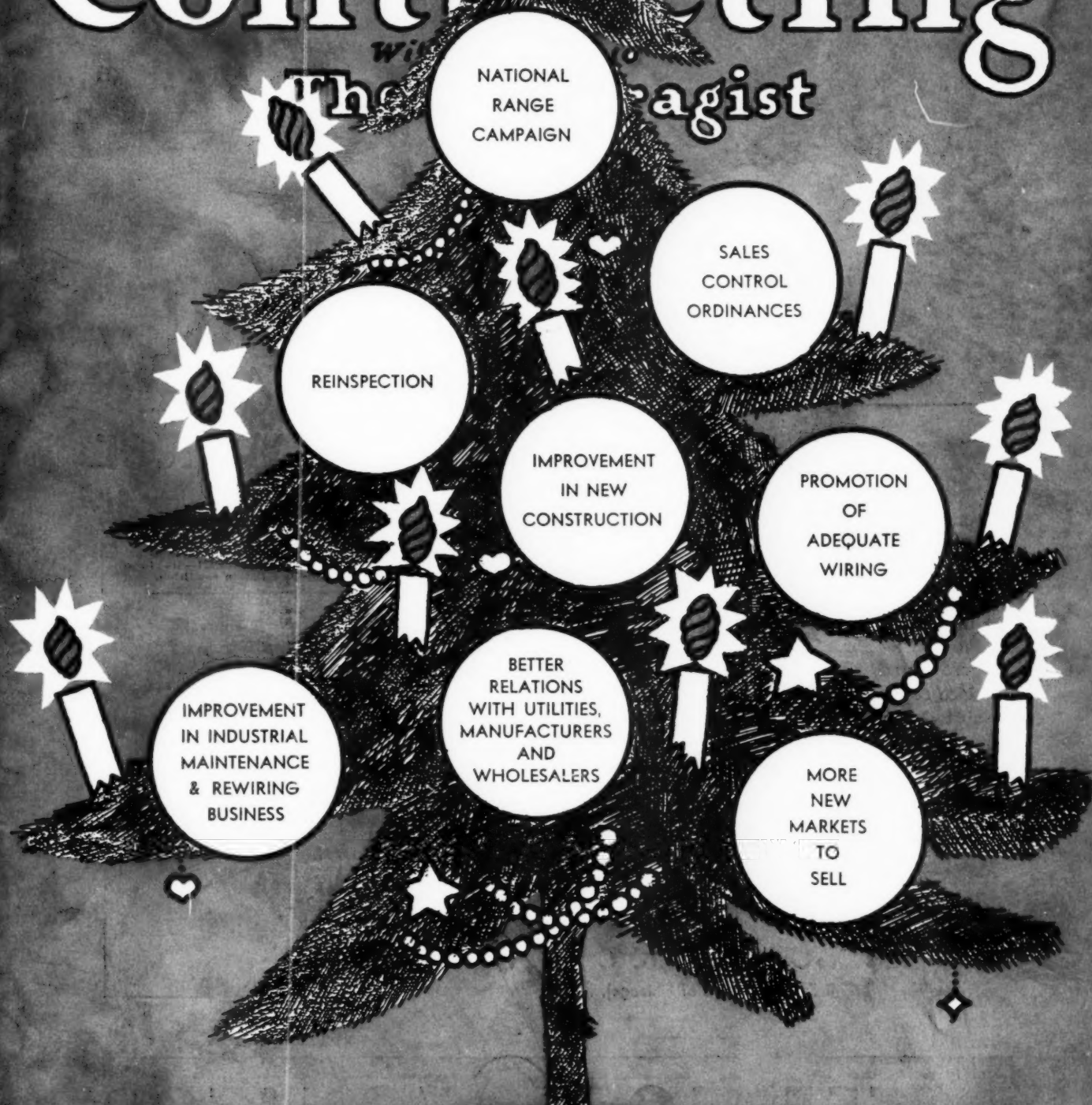
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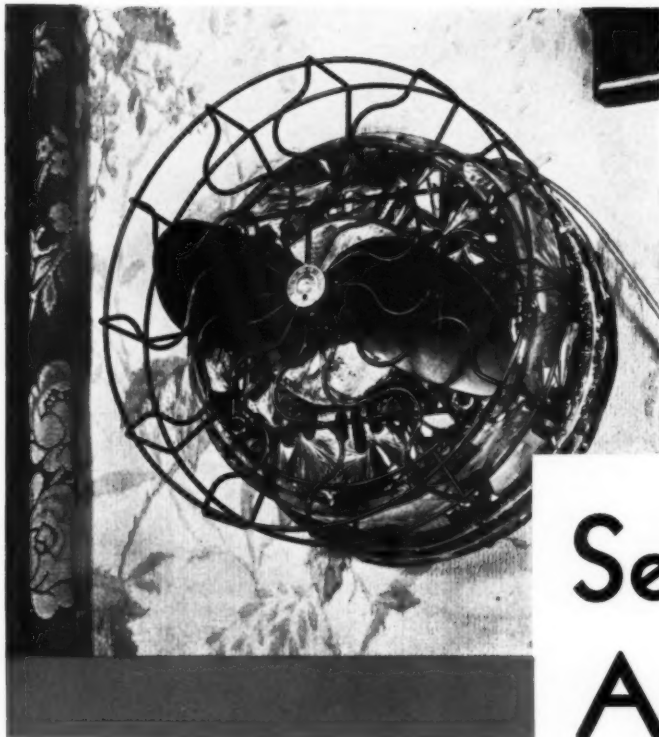
Electrical Contracting

The Magist

December
1932



**THE STAFF OF ELECTRICAL CONTRACTING WISHES
ALL OF ITS READERS AND ADVERTISERS A MERRY
CHRISTMAS AND A PROSPEROUS NEW YEAR**



There is
always
a market
for Health

Sell Healthy Air this winter

JUST as an electrical storm revitalizes the hot, dead air of a sultry afternoon, the Jefferson Ozonator revitalizes air at the snap of a switch. Think of the market for after-a-shower-pure air all winter long—at a price so low that it is no sales obstacle when health is at stake—at the operating cost of a 25-watt lamp.

The Jefferson Ozonator not only adds ozone to the air,—it destroys odors such as from stale cigar butts, musty clothes, medicinal bandages, cooking veg-

etables, and the like.

And the sales field does not end with dwellings (living rooms, bedrooms, closets). Hospitals are a big market, churches, auditoriums, vaults, 'phone booths—wherever there is confined air, deadened by poor, difficult ventilation.

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JEFFERSON ELECTRIC COMPANY

Bellwood (Suburb of Chicago), Illinois



JEFFERSON OZONATOR

VOLUME 32
NUMBER 2

electrical contracting

WITH WHICH IS INCORPORATED THE ELECTRAGIST

S. B. WILLIAMS, EDITOR AND GENERAL MANAGER

PUBLISHED MONTHLY

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THERE'S A *Growing demand*
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Electrical Division

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STEELTUBES
Threadless Thinwall Conduit

By-Passing

WHAT is it that causes the manufacturer to by-pass the contractor—particularly when there is no additional business to be developed as the result.

SOME very interesting examples of by-passing have recently come to light that cause one to believe that something is terribly wrong somewhere.

Specifications were out for electrical work and materials for a new building. The contractors' bids were in when it was discovered that two manufacturers were quoting direct on some of the material. One was low until the other found it out, when the advantage (?) changed hands. This process continued, until the final bid was only slightly more than half the original bid.

What did that manufacturer gain? By going direct to the owner who may never again be a customer this manufacturer has contributed thousands of dollars. He by-passed his old customer, the contractor, and took a licking.

Certain manufacturers of motor control have taken a notion to by-pass the industrial electrical contractor. General contractors are given big discounts—for what? Owners are being quoted direct for less than the contractor can buy the equipment.

It seems so crazy-like, particularly so soon after the motor manufacturers have gone through this grief and found it didn't pay even in good times.

Not only are these control manufacturers spending more money to sell their product

than is necessary, but they are destroying the good-will that they had previously taken years to build up with the industrial contractors.

And all for what—more business? No, because none of these price cuts have developed a bit more business in the aggregate.

THIS is not the time to rock the boat. It is time to encourage rather than discourage the contractors.

The manufacturer who sells his birth-right today will find tomorrow that it was only a mess of pottage he received in return.

In spite of the low volume of business this is the time to build for the future. Instead of by-passing the contractor, the wise manufacturer will work with his contractor and help build them into strong local agents.

The time is soon coming when a strong friendly group of local contractors will mean a fine volume of business for a manufacturer at an exceedingly low sales cost.

If any manufacturer feels that he is in a position to allow large discounts the better way is to allow them to the contractors. They will be able to do business on them and, at least, save the manufacturer his direct sales cost.

Let no manufacturer believe that this by-passing, price-cutting practice gets him any more business. His competition is not asleep and if he were, the buyer today is enough of a horse-trader to be sure to get the best price.

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Enterprising contractors are quick to take advantage of the present market for these time and money saving signals. Graybar signalling devices meet today's needs for lower costs in offices . . . schools . . . industrial plants. In fact, *any* large building. Install these timely signals and profit in three ways . . . on installation . . . on equipment . . . on other electrical jobs that may follow in the same building. Mail the coupon below for full details.

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"Look up
that memo"



"Jones, report
to main office"

"12 o'clock!"



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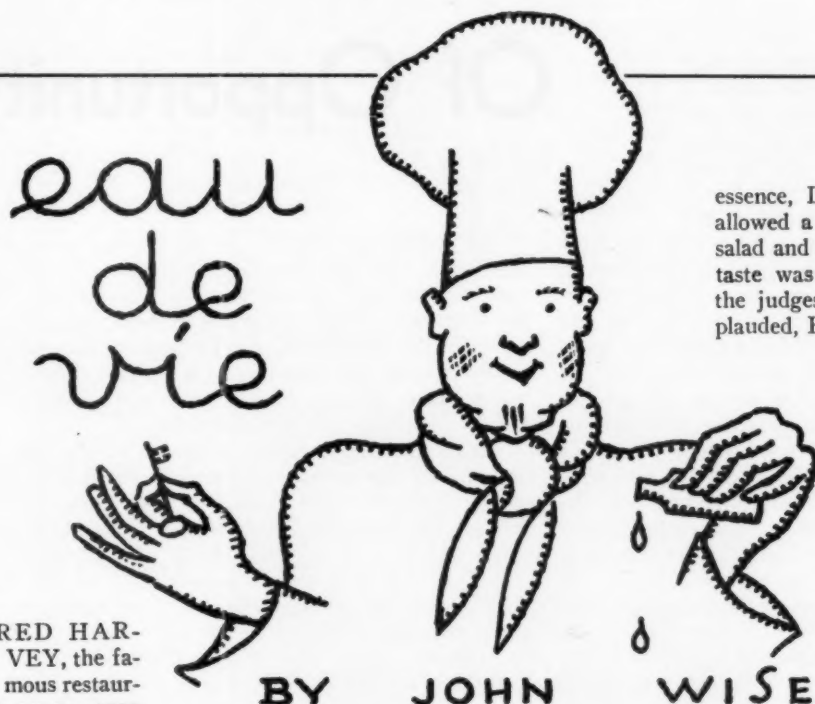
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VOLUME 32
NUMBER 2

electrical contracting

WITH WHICH IS INCORPORATED THE ELECTRAGIST

DECEMBER
1932



FRED HARVEY, the famous restaurant man, was touring Europe, so the story goes, looking for a way to make cabbage taste like artichoke, or something. Arriving in Paris on his way home, he learned they were holding a contest between fancy cooks and giving large prizes for the best dishes.

He noted that the Salad Award offered the tidy sum of 50,000 francs, and promptly decided to enter for it. Being a comparative outsider, he knew he would have to go some, so he picked a quiet spot in the Bois, pulled his hat over his eyes and did some real thinking. Then he made a purchase at a jewelry shop and went to his hotel whistling "The Stars And Stripes Forever".

The next day all the noted chefs built their salads and placed them, one after another, before the judges. Harvey was the only Yank, and of course he was last, getting little attention. Finishing his salad, he gave it a last loving pat with the wooden spoon, then paused and glanced knowingly at the judges.

Then, while all leaned forward in sudden interest, Fred took from his pocket a tiny golden casket and opened it with a gold key. Taking out a dainty phial of liquid, he announced grandly: "Now, Messieurs, I add a touch of my famous

essence, L'eau de Vie." So saying, he allowed a few drops to trickle over the salad and stepped back with a bow. One taste was enough. "Magnifique!" cried the judges, and, while the audience, applauded, Harvey was awarded the 50,000 francs.

The next day, on the ship, George Rector cornered Harvey. "Fred," he asked, "What in the world was that mysterious oil that made your salad a winner?" "Don't tell a soul, George," replied Harvey, with a grin, "but it was just plain water!"

There's what we contractors need in our selling, men, a little Eau de Vie—water of life. Fred didn't do anything crooked;

his salad was as good as or better than the others submitted. He simply used psychology of a special service, and I know many a contractor who is getting the business the same way.

One advertises and talks lifetime wiring; another stresses neatness and speed. One gives a guarantee certificate with every job, making a feature out of what is law with all good operators. Some emphasize the brands of material they use; again we see a man corral job after job with a closing talk on his methods, facilities and tools.

All this is strictly legitimate, singling out some feature and making a slogan of it; offering the prospect something which makes him feel safer and sure of satisfaction. Every contractor worthy of the name has the ingenuity to make his selling stand out, and when your customer is thus brought to recognize you as an artist in your line, you have him sold.

Employee Training The Bottleneck Of Opportunity

BY
GEORGE P. SVENDSEN
PRESIDENT
BOUSTEAD ELECTRIC
& MANUFACTURING CO.
MINNEAPOLIS, MINN.

ONE can pick up almost any electrical trade magazine or listen in on any meeting of Electragists and see or hear many suggestions for improving conditions in the electrical contracting business. There is one subject, however, that is seldom mentioned in these discussions but which is rapidly increasing in importance each day. This is the complex problem of technological education which now confronts the electrical contracting industry.

One does not have to go back many years to find a period when the four-year apprentice system for training journeyman electricians was entirely adequate. The construction methods in use were not so elaborate or varied but what the average apprentice could become fairly skilled in the manipulative procedure within his four year period. He could also absorb the necessary technical knowledge required to understand most of the problems he encountered involving a knowledge of circuit connections or motors and control. The more ambitious apprentice could increase his technical knowledge considerably by home study or attendance at evening trade schools.

Today, due to continual changes, we find our industry facing entirely different problems in the training of not only apprentices but also the older journeyman. In fact it looks like everyone from the office boy up to the boss himself will have to put in most of his spare time studying to keep up to date.

During the past few years, two general changes have been taking place which are affecting the training of journeymen with increasing importance.

First, there is the increasing trend toward the development and merchandising of new types of construction material most of which aim to reduce the amount of skill of labor necessary to install but demands a more diversified knowledge of types and Code rules.

Second, there is the tremendous growth in the commercial development of electrically operated or controlled apparatus of the most elaborate and complicated type, including the vast field opened up by recent commercial development of electronic devices.

The first development has already reached a point where the apprentice system falls down for the simple reason that the journeyman himself has to start all over and learn new methods and new Code rules. One has only to glance over a few present day trade journals or manufacturer's catalogs to see what a large amount of new construction material and methods have been introduced in the past few years.

The illumination field is an outstanding example of these new developments requiring new material and methods, such as, exterior building illuminations, lighting of athletic fields, built-in low intensity interior units, and now the commercial development of new types of highly efficient gas tube units for interior lighting that will probably outstrip the previous rapid spread of this type of illumination in the sign field.

The second development, however, is the one that presents the big problem in training. From a few simple circuits and hand controlled apparatus, we have jumped into a maze of complicated circuits and automatic control with a whole array of electronic tubes with their infinite circuit possibilities. Even the home has been invaded with its oil burners, refrigerators, and air conditioning apparatus—all electrically controlled and operated with many new electrical devices.

Some of this equipment operates on old principles but much of it, especially in the industrial field, is so new that it has been difficult to secure men to service and install it properly.

In the industrial motor field, we find hand control practically disappearing and automatic equipment is the rule of the day. In some industries this control is very elaborate with time sequence interlocking and electronic master control.

Then there is the substantial increase in new types of motors, characteristics of which must be known by the journeyman both from the installation and servicing standpoint.

Finally there is the electronic tube, which in its many forms threatens to invade the industrial field in a manner that will completely overshadow its development in the radio and sound industry.

With all this development and expansion going on, the electrical contractor is facing a serious problem. Unless he and his employees dig in and make a serious effort to closely follow all these new trends and specialize in one or more of them, he will gradually find himself pushed out of the picture by his more enterprising competitors; or he will wake up some morning to find a whole series of specialized semi-electric industries doing their own electrical installation and servicing.

As each new electrically operated specialty has been introduced, a few electrical contractors have seen the opportunity and got in on the ground floor; but the great majority have stood idly by to see a new industry build up and train its own men.

Now we are on the verge of a tremendous development in electronic devices and again the electrical contractor will have the choice of digging in and learning all he can about the sale, installation, and servicing of this new class of equipment or watch another new specialized industry taken over by others.

Year by year the electrical contractor has seen his business volume reduced while the total volume of all electrical business is increasing due to new developments. If he is going to be content to merely install the pipe and wire for equipment that is sold, installed, and serviced by others, he will soon find even this work taken away by these very specialists, with nothing left but a rapidly diminishing proportionate volume of simple types of home, commercial, and industrial wiring.

It seems that the only answer is in education and training for both himself and employees.

He must study and adopt new merchandising methods. He must keep in close touch with all new electrical developments. He will find in his construction work that less and less manipulative skill is required and more and more engineering, and commercial knowledge.

The small shop will want good all around men with substantial training in what might be called practical engineering. The large shop can use specialists highly trained in some particular branch of it.

All of this will mean that everyone will have to work hard to improve his fundamental electrical knowledge and add considerable allied knowledge either by self teaching, trade schools, or cooperative classes.

This problem of training is equally important to the owner of any electrical contracting business, to the foreman, to the journeyman, and to the apprentice.

First of all the contractor must see that he or someone in his organization keeps in close touch with all new developments that may directly or indirectly affect his business. This will mean constant reading and study of trade papers and manufacturers' catalogs and bulletins, not only in the electrical field but in closely allied industries.

It will be advisable to seriously consider stepping into one or more of the specialized lines such as, Electric Ventilation, Electric Refrigeration, Radio, etc.

Electrical Contracting, December, 1932

The old fashioned rule of thumb foreman is going to find it increasingly difficult to hold his job. The foreman of the future will have to be alert to new developments in construction methods and materials. He will require something of an engineering education if he is going to keep up with the increasingly complicated electrical and mechanical developments in his and allied industries.

He will find it advisable and profitable to plan a course of study to keep abreast of the times either by home study or attendance to trade extension classes, if available. His problem will be to keep ahead of his men at all times, and be in a position to instruct and advise them when new apparatus or material comes along for installation or service.

The journeyman's problem will be similar to the foreman's. He will find that there will be less demand on his manipulative skill and more call for technical knowledge. For the good of his employer and himself, he will attend a trade extension class or try to keep up to date by home study. If he is in the industrial service branch of his business, he will find it continually more difficult to hold his job without increasing his knowledge of not only his own electrical apparatus but of allied mechanical equipment as well.

Finally the apprentice will need considerable attention from a different viewpoint than in the past. A more careful selection will be necessary to raise the standard to meet new conditions. A higher preliminary education will be essential in line with the requirements of other technological trades. There is already a tendency to raise the compulsory school age limit from 16 to 18 years.

The new apprentice training will trend toward junior engineering subjects. Serious consideration should be given to the combination trade school and working plan of training, with more emphasis on the technical side to fit the changing conditions existing in the industry.

The industry as a whole might find it advisable to consider a plan of cooperative weekly or monthly educational meetings wherein new developments in material, apparatus, and methods could be demonstrated and discussed.

Our apparent increased competition from within our own industry is due primarily to a gradually narrowing field of operation.

It would seem that as a matter of survival, the electrical contractor and his employees should give this matter of education and training some very serious thought; because here is an industry that is going to call for a combination of manipulative skill and technical knowledge far different from any other industry and one in which there is going to be an increasing demand for men with training along practical engineering lines.



GEORGE P. SVENDSON

Primary Metering Offers Opportunity To Contractors

BY
CLOVIS
M.
CONVERSE

ELECTRICAL service for an industrial plant or a commercial building may be supplied in any one of a number of ways. Current may be delivered at secondary or operating voltage directly from the utility company's mains, or it may come from a transformer bank provided for that particular customer and owned by the utility company. In either case the metering will be done at the service voltage. Current may also be furnished and metered at primary voltage through a substation owned by the utility company or the customer.

Customer-owned substations, whether merely a group of transformers mounted on a platform out of doors, or a more elaborate layout in a special vault, or building constructed for the purpose, can and should be the source of considerable business for the electrical contractor. While there are many such substations in operation there are undoubtedly many places where a change to primary metering and the installation of an industrial substation would be advantageous to the owner.

As an example of this situation, one of the large packing companies is at the present time making a study of the rate situation in each of its properties with the idea of installing a substation with metering at primary voltage if this should be justified. As a result of this investigation one contract has just been made for such a change over.

To justify the customer-owned industrial substation it will be obvious that it must show a saving in operating cost, or some other positive advantage. In most cities the rates for energy taken at primary voltage are substantially lower than at the ordinary distribution voltage. The problem will be to show that the savings due to this lower rate make it worth while to invest the money in a substation.

In going after this class of business a contractor will do well to cultivate the friendship of the power salesman for the utility company. He must also thoroughly understand the rate structure which applies to this class of business in his community. In some cases a power salesman will have a customer in mind where a change in the method of service would be an advan-

tage and would be willing to work with a contractor to put through such a proposition.

To make a study of the problem in any plant certain information such as; total load, maximum demand, total power consumed, possibility of future additions, etc. The owner of the property can occasionally furnish this information, but it can usually be secured more easily and quickly from the utility company. It is at this point that the friendship of a power salesman will prove invaluable. From a study of the data secured it will be possible to determine the transformer capacity required and to estimate the amount of saving in operating cost that may be expected. Good judgment must be used in choosing figures that represent average conditions. A record of several years of operation should be obtained if possible.

With a proper rate structure, and on loads of reasonable load factor, a substantial saving in the annual energy cost should be shown. Against this saving must be offset the added costs due to the substation operation such as, interest on the investment required, cost of transformer losses, rental value of space used, maintenance costs and any others that may accrue due to the change in operation. In considering these factors it may be found that space may be had for a substation at little or no cost and in some cases the maintenance cost need not be considered as no additional help will be required.

The installation of an industrial substation will in most cases, if carefully handled, provide much better service for the owner. Careful selection of a central location will cut down secondary feeder losses and improve regulation. Voltage regulation on primary feeders is usually better than on secondary lines. Furthermore, there is less liability of shut down as there are fewer customers on a primary feeder and less liability of trouble.

Another angle to this problem which may well be considered at the same time is power factor correction. Many utility companies have a rate structure which penalizes the customer with a low power factor. Correction of this condition by means of a large synchronous motor or a static condenser will frequently save an owner a considerable sum of money over a year's time.

Reduction in operating costs is always a prime consideration with a manufacturing company, it is especially so in these times of keen competition. The contractor who will study this problem and utilize this attitude will not only profit by his activity, but will be doing a real service for his customer.

Get Your Customers To Spend Money To Save Money

There are still industrials and institutions that have money. They can be persuaded to spend for capital investment provided they can be shown worthwhile savings. Some ideas of such economies are shown in this article. A careful study should reveal even greater economies in virtually every industrial plant that has been wired ten years or more.

Automatic Control Reduces Maintenance Cost

A large eastern hotel, having an electrical maintenance staff of over ten men, suffered large losses due to incorrect manipulation of hand-operated motor starters by inexperienced help.

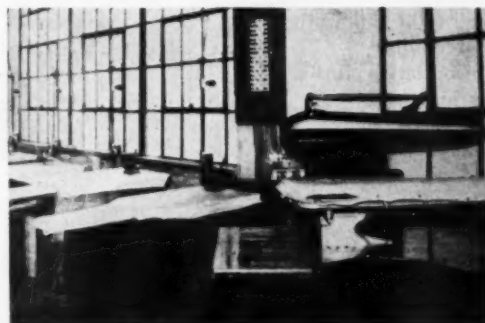
In the Commissary Department, on dishwashing machines, it was not unusual to replace seven or eight fuses a week on each machine.

Automatic motor control was installed on these dishwashers, with such success that push button control was applied to all machines throughout the building.

In addition to the savings in maintenance, it was found that the added flexibility of push button control on many machines would have more than justified the change.

For instance, on the dishwashing machines, a push button station at the sending end, and another at the receiving end, made it easy to start and stop the machine, saved time and electric current. This flexibility, however, was only a by-product on this installation, as the reason for making the change originally was the saving of the heavy maintenance expense, due to frequent replacing of fuses.

Data furnished by Cutler-Hammer.



Separate Iron Circuits Prevent Current Waste

In this laundry ironing department installation made by MacNutt Watts & Tankard, New York, the contractor stressed the importance of an adequate wiring job, with the result that the complete job shown in the photo was made. Each iron is wired on a separate circuit so that a blown fuse does not stop the work of other employees at different irons. A red pilot light indicates that current is on and this is quickly noted if a worker is away from the bench so that no current is wasted.

Duct Wiring Saves on Additions



After the maintenance department had succeeded in stringing armored cable all over the plant as shown in the illustration at the left, the S. Edward Eaton Company sold the factory owner the overhead duct job shown at the right. With the new wiring it is possible to make additions quickly and inexpensively wherever wanted.

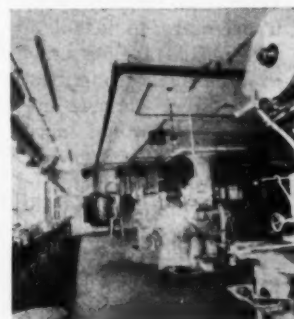


Photo Electric Light Control Saves 4000 kw-hrs. Monthly

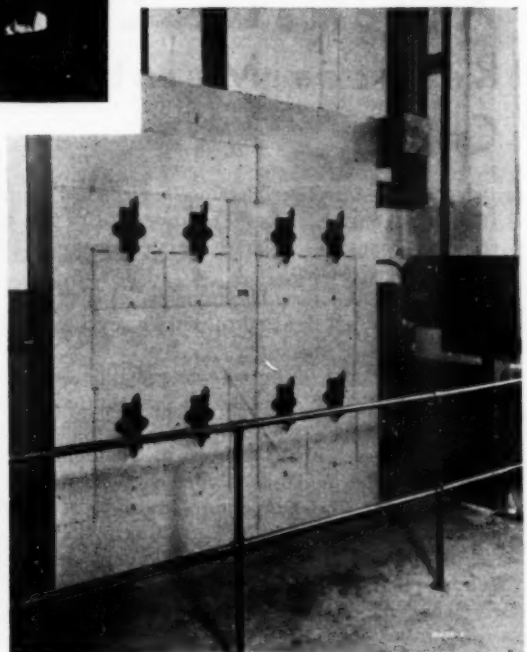
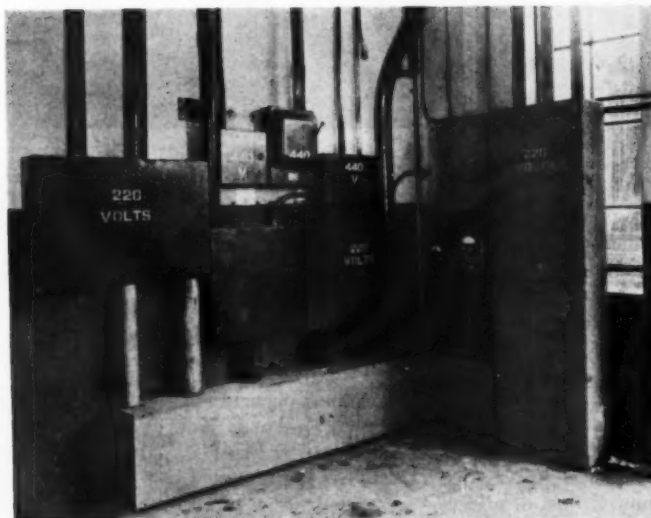
The Chisholm Ryder Company have obtained striking economies with photo electric control of lights in their plant. Besides improved production and reduction of accidents lamp replacements are reduced by one-fourth and over 4000 kilowatt hours saved monthly.

Information furnished by Westinghouse.



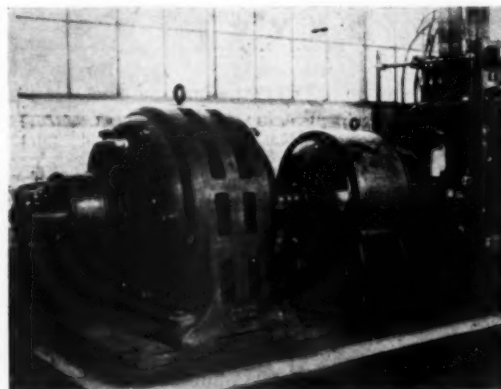
Survey Shows Saving

A survey by Miller-Seldon Electric Co., showed that the Norge Corp., Detroit, could save a considerable amount each month by purchasing primary current. The recommendations which included revamping the entire secondary layout were accepted. The Trumbull dead-front panelboard below on the right replaced the inadequate distribution center at the left.



Synchronous Motor Installation Pays For Self in 16 Months

The Crucible Steel Castings Co. of Milwaukee, Wisconsin, recently found it necessary to install an additional traveling crane in their plant to operate with direct current motors. This would mean that their direct current load would be increased beyond the capacity of their direct current source of supply and therefore it would be necessary to install additional capacity.



A survey made in the plant indicated that their alternating current plant load offered opportunities for economy in the improvement of power factor. It indicated that a considerable saving could be effected by utilizing a synchronous motor to drive a new direct-current generator. Accordingly, arrangements were made to install a synchronous motor wound for an 80 per cent leading power factor.

Operating figures since the

Electrical Contracting, December, 1932

unit was placed in service indicate a monthly saving of \$160.00 resulting from the increased power-factor. (\$1920 per year.) This is a return of 76.8 per cent on the investment of approximately \$2500 for the synchronous motor and control. In other words, the indications are that this synchronous motor installation will pay for itself in about 16 months.

Information furnished by Fairbanks-Morse.

Big Economies Possible in Industrial Lighting

IN searching out opportunities for new business, industrial lighting still affords the electrical contractor a major opportunity. In spite of the investment costs, contractors can show by careful study sufficient economies to offset the entire cost of the installation, frequently in a year or less.

There are still thousands of factories equipped with drop-cord lighting or with very low intensity systems. Changing to modern lighting, the higher intensities will frequently bring savings in reduced spoilage, labor turnover, current consumption, number of operatives, etc.

The figures shown on this page cover surveys made in two plants which indicate the extent to which savings can be effected by modern industrial lighting installations. These figures were submitted by Benjamin Electric Manufacturing Co.

Large Shop

In a large shop lighted with 500-watt lamps in 18 in. R.L.M. reflectors on 20-ft. centers the intensity of light was so non-uniform that 60 drop lights were required at the machines.

A study indicated that better lighting was possible by use of small lamps at closer spacing. 34 R.L.M. reflectors were installed on 10-ft. centers and all drop lights were removed, found to be unnecessary.

New lighting takes 9.4 percent less electric current but gives an average intensity of 11 to 12 ft. candles as compared with 2½ to 7 ft. candles before. Glare and shadows have been eliminated.

Results are:

Less tool breakage and spoilage of work. Greater production due to less eye strain. No heavy maintenance on drop light cords and bulbs.

Auto Body Plant

A midwestern plant making auto bodies, using R.L.M. reflectors and projector to light several departments shows following results with high intensity light:

Labor turn-over reduced from 6.37 percent to 2.78 percent a month; each one percent a saving of \$96.00 a year. Piece rates reduced 8 percent in metal-working department; each one percent saves \$842.40 a year in labor, whereas total lighting cost is only \$428.40 a year. Work on putty glaze line speeded up permitting use of 12 less men on line saving at rate of \$30,589 a year. Striping work done more perfectly eliminating one repair striper saving \$1,680.00 a year. Finish-polishing

work also improved, eliminating 19 men on repair work saving at rate of \$30,195.08 a year. Investments in equipment returned quickly, one department every 9½ days.

Consolidated Service Saves \$3000 Annual Bill

S. J. O'Brien, New York City, recently completed a job for St. Agnes Hospital, White Plains, N. Y., whereby the customer was saved \$3,000 a year on the current bill. The hospital had been billed through several meters and services located at various places. The saving was effected by consolidating these services at one point.



C. M. DAVIS

Works for Percentage on Savings

C. M. DAVIS of Harrisburg, Pa., has one of the largest electrical construction businesses in that city but with construction work at low ebb he decided that he must find some new plan to keep his establishment busy. He is now specializing on increasing the efficiency of his customers' electrical equipment. Where he makes a survey and is able to increase efficiency or reduce costs he takes one half of that amount for the period of one year as his fee.

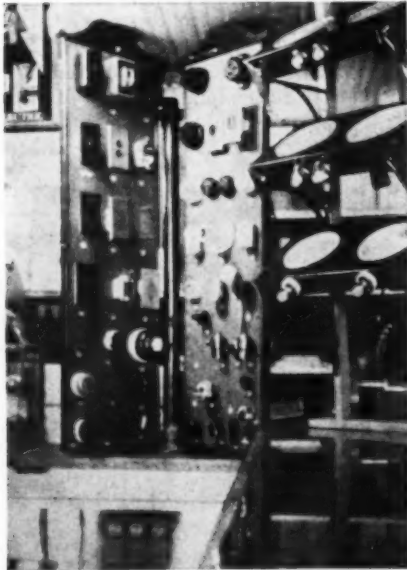
Sometimes he makes a saving through suggesting a double throw switch which will prevent high peak loads. Again it is done by rearrangement of lights for better results.

In one case he effected a saving of \$80 per month, half of which for a year gave him the fee of \$480, without the necessity of his spending money for materials.

Mr. Davis has always been active in work for the welfare of the contractors and at present is serving on a committee of men in the various building trades, working on a plan to stimulate construction.

Business Building Ideas

Employs Sales Psychology



THE THREE PSYCHOLOGY DISPLAYS



C. L. LEWIS of the C. L. Electric Co., Pocatello, Idaho, is keen to use those little psychological stunts that will stimulate in the mind of the public the idea that he is not simply the ordinary electrical storekeeper but does wiring and handles large electrical installations—in other words, that he is an engineer and contractor as well as a dealer.

The pictures herewith show what he calls his three "Psychology Displays". He has a well-kept, attractive store, in so far as electrical appliances, lighting fixtures, etc., are concerned. But on the floor, underneath one of his fixture displays he has placed a long row of motors, generators and motor-operated pumps. He does not expect to sell motors off the floor, but he wishes to impress all who come into the store that he knows all about motors and is the headquarters for the solution of any kind of a motor problem. In truth he is this, for he does an extensive motor repair business.

In the same room he has arranged a display of heavy switches, switch cabinets gongs, annunciators, etc., which carries through from the main store to the shop in the rear. This display is constantly bringing up the thought in the minds of the store customers, that here is a concern that does all kinds of big work as well as house wiring.

Lastly, he has built a display board on the principle of the leaves of a book (four leaves in all hinged on a vertical standard) whereon are neatly mounted all the various switches, wall plates, receptacles and other wiring devices that are commonly used. People not immediately interested, perhaps, get to thumbing through this "book" and go away with ideas of something that they wish to have installed sometime. It is also a very good demonstrating medium when figuring on wiring with customers. The different items of equipment that he proposes to use can so much more conveniently be shown than by picking them out of stock, one by one.



Inspects Fire Alarms

T. S. RICHARDSON of Auburn, N. Y., keeps in touch with industrial plants in his section through making regular inspections of industrial plant fire alarm systems. In testing these out he has an opportunity to go through the plants and by keeping on the alert he is frequently able to see opportunities for additional work. He also has an especially attractive light for use at road stands and

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carries a sample in his car when traveling on the highways. That extra money from the little jobs totals up big at the end of the year, he finds.

Sells Mechanical Stokers

CW. PEHRSON, proprietor of the Pehrson Electric Co., Logan, Utah, is both an electrical contractor and a merchandiser with the vision to take advantage of opportunities. The summer of 1932 found him with two wiremen, for whom there was not sufficient work. He also normally does a large appliance business in radios, ranges and refrigerators, the sales of which are largely produced through a sales manager who has three commission salesmen working for him. This sales organization was also in a position to work on another line.

Casting about, he sized up mechanical stokers for home and industrial use as a logical line for that territory, and secured the agency



C. W. PEHRSON

for the McCoy stoker manufactured in Salt Lake City. This line was taken on in July. The sales manager and his crew work actively on the stoker prospects and Mr. Pehrson himself gets many of the leads, and in the first two months, they did rather better than they had anticipated.

There is an electrical installation with each stoker and he has set a uniform price of \$25 for this electrical installation. There is a city ordinance which compels all such installations to be made by a licensed electrician. Since, on the average it requires about a day's time for a wireman for each stoker, this has been a nice fill-in business to help keep his electricians employed.

Aside from the home owner, the best prospects are churches, schools, commercial buildings, warehouses, stores, etc. The prices of the stokers run from \$275 for small residences up to about \$1,000 for schools and other large buildings. After paying sales expense and overhead, Mr. Pehrson says that there is about 25 per cent profit left for the contractor. In addition, he makes a profit of about \$7.50 on each electrical installation.

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JACK STARIHA; GEORGE HOUSTON; FRED WUERL AND E. J. PALMQUIST, OF THE PALMQUIST ELECTRIC

Believes In Advertising

E. J. Palmquist of the Palmquist Electric Co., Helena, Mont., uses newspaper, sign board and radio advertising. In his opinion the newspapers pay best. Space is taken in two, totaling about 120 inches a month at about \$60. Signboards are used to the extent of about 7 displays or showings a month at approximately \$50. Radio advertising consists of 15 minutes a day over KFBB, Great Falls. This costs \$40 a month. Altogether, he is doing a considerable amount of advertising. Much of it is matched by manufacturers.

The Palmquist Electric Co. has been hanging and servicing Claude Neon electric signs for three years. More new signs have been installed in 1932 than 1931. The company has just finished the U. S. Veterans Hospital, about a \$20,000 job and St. Peters Hospital, about \$2,000, besides doing a lot of repair work and remodeling.

Signboard Specialization Saves the Day



E. DOWNING

In these depressed times, E. Downing, of the Independent Electric Co., Butte, Mont., finds that a specialty that he had worked into is a life saver. For the past 10 years he has maintained all the signboards, several hundred in number, formerly owned by the Wisner Advertising Co. and now by an eastern syndicate. Formerly he furnished everything, including the lamps, reflectors and time switches. Under the present ownership the three items mentioned are bought by the sign company, but he still furnishes all the materials and supplies. This sign work has enabled him to keep two men going during the past summer (according to union rules in Butte, the owner cannot do wiring himself). Downing says that this specialty of his does not seem to be competitive, at least not in Butte, where he has had the inside on it for a long time. It is all time and material work.

Sell

BY F. F. LOOCK
GENERAL MANAGER
ALLEN-BRADLEY COMPANY
MILWAUKEE, WIS.

Automatic

Motor Control

THE electrical contractor, along with others serving American industry, is looking for new and profitable ways of increasing his business. When industrial activity is running at a high rate, there is no great problem in finding an adequate volume of maintenance work or new installation jobs. However, when business is running at a reduced pace, the successful contractor must combine real salesmanship with engineering to land a satisfactory quota of profitable jobs.

We are now in a period of low business activity. Prospective customers are apparently more interested in low prices, today, than ever before. In fact, it seems that never before have prices been so competitive. It may give us encouragement, however, to recall that Andrew Carnegie was also troubled with price problems, and he said, years ago, "Even in these days of fiercest competition, when everything would seem to be a matter of price, there lies still at the root of great business success the very much more important factor of quality."

The electrical contractor who faces the same sort of "fiercest competition", today, must look for an answer to his problem in the quality of his service and this quality is not entirely a matter of good material or good workmanship. A contractor must combine with these two components a third and more important component—namely, good engineering.

Good engineering in the matter of motor control, today, invariably involves automatic control. The evolution of electric motor control has progressed from the early hand-operated starting apparatus of yesterday to the superior automatic control of today. Right now, when plant owners are discovering that their plants are out of step with modernized low cost plants, automatic control is accepted as one means of increasing plant efficiency.

Contractors often remark that they cannot sell automatic control for two reasons:

First, the substitution of automatic control for ordinary hand control in any bid increases the price above competition with the resulting danger of losing the order.

Second, very often the electrical contractor bids through a general contractor, and, therefore, has no opportunity to present new engineering ideas to the man or organization who pays for the job.

It will be granted that these two possibilities exist and complicate the problem of selling engineering service along with material and workmanship. However, this is not an insurmountable problem, and contractors who do possess the ability to get over this obstacle find themselves in better favor than the ordinary type of contractor who is content to bid only on labor and material.

Why should the electrical contractor make a point, now, of selling automatic control? The first reason is that wherever he can feature automatic control in place of hand control, he is aligning himself with the modern trend in control engineering. He is falling in with the parade that is marching irresistibly toward better and safer plant operation.

The second reason is that automatic control has been widely advertised to plant owners and managers for years. They fully appreciate the economic advantages of starters which have no-voltage protection, and thus safeguard their workmen against accidental restarting of machinery after stoppage for any reason. They also are alive to the economies obtainable from starters without fuses, which permit workmen to reset overload relays by pressing a button. The loss of time searching for fuses is a costly production item that can be eliminated.

The third reason is that automatic control by the elimination of replaceable fuses does away with what might be a serious hazard to their motor equipment. When a fuse is replaced, the management cannot be certain of what capacity the replaced fuse may be. Even a nail or a piece of wire may be substituted for a protective fuse, thus doing away with protection completely and endangering man, motor, and machine.

Fourth, plant operators realize that, with automatic control, the starting cycle of their motorized machines is automatically controlled by the starter and that any type of operator, no matter how careless, cannot bring harm to themselves or to their equipment by careless starting of motors.

Plant owners have learned that automatic control steps up the discipline of the plant, because modern equipment inspires the respect of the operators. Moreover, a manufacturing plant, thoroughly equipped with modern control, makes a splendid impression upon visitors, many of whom are prospective or actual customers.

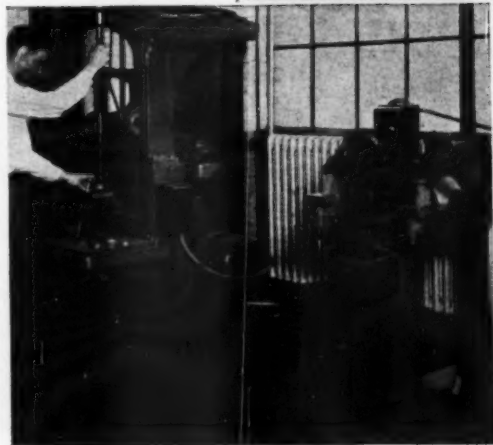
Automatic control does not necessarily eliminate factory labor. In some cases, the installation of automatic control equipment may replace an operator, but the

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important benefit of automatic control lies in its protective qualities to man and machine, and in the more accurate control of manufacturing processes. This is reflected in lower costs and in the improved quality of the product. Automatic control justifies itself in times of low business activity as much as in times of intense activity.



There is an opportunity for automatic control in virtually every industry, be it candy manufacturing, textiles or machine shops.



Automatic control can and should be sold, today, by electrical contractors. But the contractor must understand the selling arguments in favor of automatic control to convince his customers of the justification for a higher price.

From the standpoint of the contractor, there are other advantages which should make the sale of automatic control of interest to him at this time. Any contractor, who demonstrates his engineering ability in solving his customers' problems, merits increased respect. After a job of this kind is installed, the plant owner is invariably more pleased with it than with a makeshift installation of hand control.

In addition to this, the installation of automatic control adds to the installation labor and the volume of material used when the job is installed. The auxiliary circuits for the push button control stations, limit switches, relays, thermostats, pressure regulators, etc., and the use of individual starters on each machine in place of a group starter, as is customary in many hand-controlled installations, adds to the size of the job and to the profit.

Altogether, this is the time for the electrical contractor to stress the advantages of automatic control on every old or new job upon which he is asked to quote. Automatic control gives him a basis for recommending the rehabilitation of old installations to bring them up-to-date with newer plants which are producing merchandise at a profit, even at present prices.

Much of the automatic control now available for general industrial applications has become highly standardized. In fact, magnetic across-the-line switches are now merchandised as package goods through regular trade channels. No extensive technical knowledge is required for their application or installation. By the addition of such auxiliary devices as limit switches, float switches, pressure switches, thermostats,

and other pilot controls, the use of the simple magnetic switch can be extended to many more elaborate installations. By using standard equipment of this type, various types of industrial control can be worked out requiring only a working knowledge of two and three wire control circuits, as simple to understand as the wiring of a three-way switch. In the matter of installing more intricate apparatus, such as automatic multi-speed motor control, de-

tailed wiring and circuit diagrams accompany the equipment and installations should not present any real problem to the wireman.

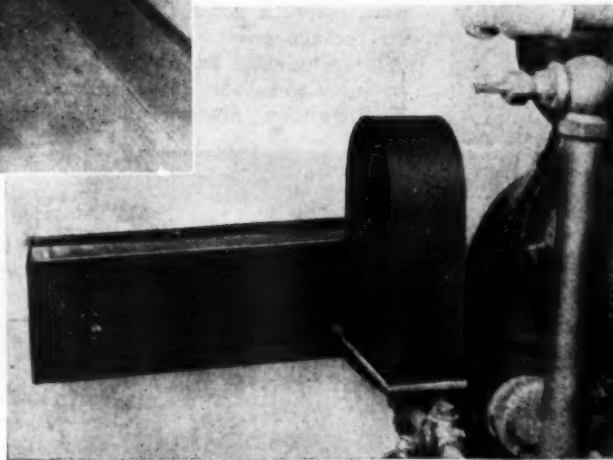
The type of engineering talent which the contractor must have within his own organization is that which can visualize a prospect's manufacturing problem and can further visualize improvements in that process resulting from automatic control. In general, this requires only a knowledge of the various types of standard control equipment now available, both in the switching equipment and in the variety of auxiliaries cataloged as standard equipment. The electrical contractor can then suggest combinations of control equipment and accessories which can bring about reductions in manufacturing costs and, therefore, justify the expenditure of money for their immediate installation.

Electric Heat As a Source of Winter Business

There is hardly an industrial plant that does not have isolated spots that are too expensive to heat by steam where electric space heaters would prove very effective and economical.



The checker's office is generally too far away for connection to the central heating plant.



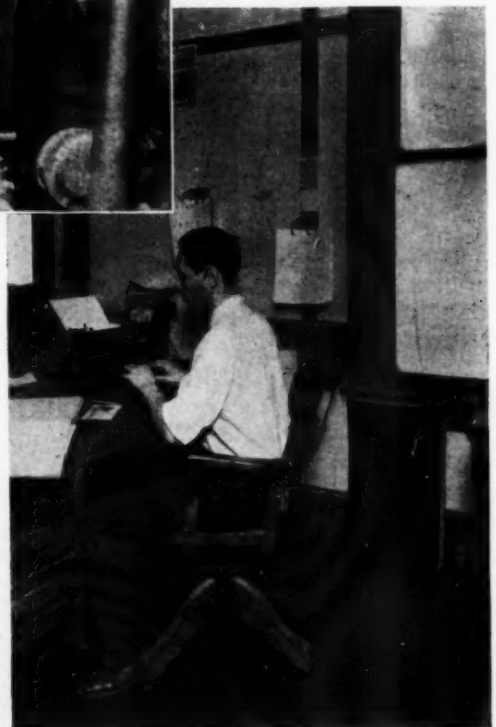
Sprinkler valves must be ready at all times to act. Heaters will keep the valves from freezing.

Isolated offices do not have to have coal stoves, they can be made comfortable and inexpensively, with electric heat.



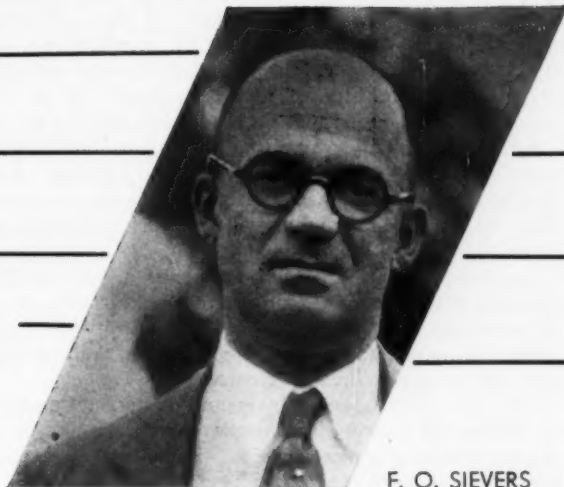
Hospitals and first-aid places need heat seldom but when they do they want enough and in a hurry.

Photographs by
courtesy of Edwin
L. Wiegand Co.



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Builds Industrial Business By Rate Studies



F. O. SIEVERS

WHILE to most electrical contractors power rates frankly are considered insoluble and left alone, there is, particularly in industrial business, the electrical contractor who makes a real study of rates and the application of wiring layout to them an opportunity both for the valuable industrial business that results from this knowledge, and the goodwill of his customer.

Kuchel-Sievers Electric Works, of San Francisco, have proved this to their own satisfaction. Both Charles J. Kuchel and Frank O. Sievers have specialized in rate analysis. It has brought them many worth while jobs in the remodeling and rehabilitation of industrial plants.

Just what the procedure is in developing such business, Mr. Sievers found it hard to describe. "It is a matter of using your head," he exclaimed. "There are no set rules. Every customer's case has to be treated differently. It can't be reduced to any formula or plan. Even the approach to a job, the manner of getting permission to make an analysis, is individual. I never have been sold on these stock sales speeches, and I don't think you can use them in handling this business.

"In the first place you are dealing with intelligent men. They are not interested unless you can very nearly promise them some benefit. This takes a little study of the plant before hand. You can waste your own and the customer's time very easily if you do not know where you are going."

The analysis itself consists of a study of loads, of the demands of individual machines or groups of machines, so that from this information it is possible to combine, or reallocate loads to reduce maximum demand. Sometimes this calls for the installation of devices which give warning when demands rise and endanger the maximum. Perhaps it calls for automatic throw-off of load when it reaches the danger line.

Distribution within the plant has to be studied. Sometimes, where the rate structures are favorable, lighting and power can be combined on one meter. Sometimes it means installation of a 3-to-2-phase transformer, or vice versa, for purposes of combining all current through one meter. Certain cases call for placing heating loads on separate meters on special schedules, while other cases involve changing from direct to alternating current. Every advantage has to be taken to get the benefit of the lower brackets of rates.

In all cases an intimate knowledge of every one of the power company's rates is imperative.

By means of the offer to make a rate analysis the contractor is enabled to go into a plant and discover the necessity for correcting poor power factor, poor distribution efficiency. Tests are often necessary to determine the operating efficiency of many or all machines. Very often the results of such tests will be disappointing in that everything will be operating satisfactorily. Yet often it is just as important that everything be found to be ship shape as it is to find that there is work to be done. At no time, Mr. Sievers cautions, should the analysis or test work be made solely on a basis of artificially creating work where it is not justified by engineering data.

While the testing of equipment is a legitimate excuse for studying a plant and its electrical efficiency, out of which may come recommendations that will lead to work, every improvement suggested must be sold on the basis of real knowledge of costs and real benefit to be derived. "Be sure that what you propose will really save or pay for itself," warns Mr. Sievers.

On the other hand the opportunity to get in a plant and make an investigation may result in the unearthing of serious wiring conditions which need correcting. In one plant, for instance, it was found that there was a voltage drop from 225 volts at the switchboard to 180 volts at the motors. The correction of this condition resulted in a \$5,000 job.

Another caution given by Mr. Sievers is that the contractor must develop a sense which will tell him to be careful of the industrial plant that wants to get a lot of free advice without signing up a contract. No contracting firm can afford to devote much of its time or effort upon altruistic services of this kind.

In a paper which he presented at the last Electragist convention at Kansas City, Mr. Sievers declared, "The things that make the wheels go around are those that carry sufficient gross margin to provide adequately for our cost of doing business, plus a net profit." This principle, he declares, must be true of rate analysis as well as of every other phase of contracting business.

RED ink flows from the fountain pen of V. R. Knight, president and general manager of the California Electric Works, San Diego, Cal., industrial electrical contractors, but it seldom finds its way onto the books of the firm. "There is so much talk of red ink," says Mr. Knight, "that I thought I'd use it in my fountain pen, just to see what folks would say. You'd be surprised what a lot of fun I get out of it, and how it breaks the ice and lets me talk business and sell a motor car or an industrial modernization job once in awhile."

A good deal of Mr. Knight's startling effect with the red ink, with which he signs letters, makes notes, does all necessary writing, is due to the cheerful grin with which he accompanies it. The grin belies the red ink, and just naturally invites comment.

Yet the red ink stunt is by no means the only method by which this enterprising firm develops business. It is always springing a new surprise. Every once in awhile a snappy post card is sent to all customers reminding them to call the California Electric Works when they need electrical service. Another stunt was the printing at the bottom of each letter a little bracket, "As indisputable evidence of San Diego's climate, yesterday's temperature was: High — Low —" in which are typed the figures for the previous day. This little touch, a characteristic enough California touch, is distinctive and serves to remind the recipient of the California Electric Works.

The company is a cooperative organization, owned by its employees, each of whom is a specialist and in charge of some particular phase of the company operations. It has been in existence ten years now, and at the recent tenth anniversary every man rededicated himself to another ten years, come what may.

Meetings are held, these days, twice a week, in the evenings; the wives of the group furnishing the dinner and the men taking up some phase of the business, usually a method of producing more sales, or of handling the engineering of some particular job.

One man voluntarily stays on duty at the shop every evening, the task being rotated among them, and during this time devotes himself to the construction of display material, improving of the books or the tools and facilities of the shop, or to some definite constructive work, unless called out on night service.

As a result, many interesting demonstration and selling devices are planned, and executed. For example, to attract attention to its V-belts for refrigeration installations and other industrial and commercial motor drives, a clever display was worked up. A wooden frame supported a 5 hp. motor, which was used merely as a load, on each side of which was placed a 2 hp. motor connected to it by means of a single v-belt. Above were mounted an automatic magnetic switch for each motor. Behind the assembly was run a slow speed sign flasher which alternately turned on, through the mag-

netic switches, first one motor, and then the other, for 10-second intervals.

Each motor, in starting, drew from 25 to 30 amps., since it was required to overcome the reverse torque already built up by the operation of the other motor. An interval of 4 sec. was provided for idling without current before the reverse motor current was applied.

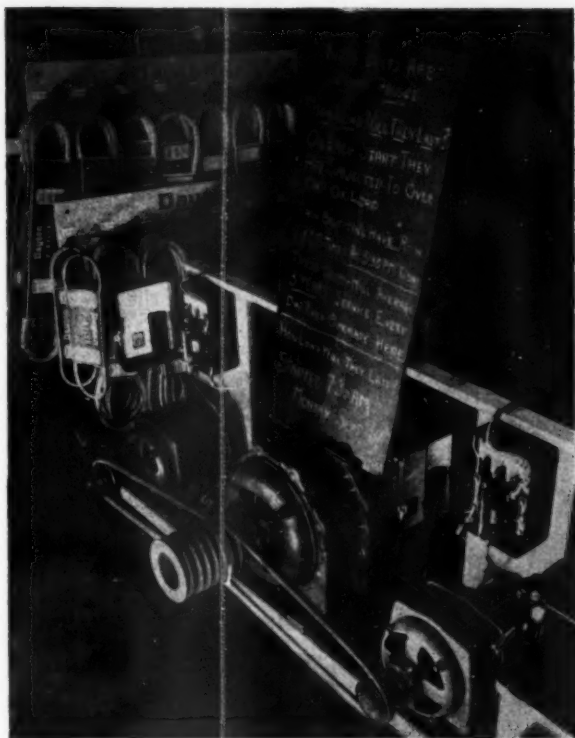
The demonstration not only attracted attention and caused comment, but it gave the v-belts a grueling test such as could also be talked about for many a sale. As a rule on a refrigerator compressor, a motor will cut in and out about sixteen times a day. This test cut in a motor 180 times per hour, or 1800 times for the 10 hour run each day. Likewise a belt of this size is seldom used on any motor over $\frac{1}{2}$ hp.; so that, to begin with, each belt was 10 times overloaded or more. The equivalent of three years work was given each belt every day of the test, Mr. Knight estimated.

All refrigeration customers were invited to come to

Aggressive Selling Builds Industrial Business

the shop to see the interesting trial. Every one provided a sales opportunity.

Another such demonstration illustrated the superior qualities of a well installed, completely protected motor installation as against an ordinary minimum job. A compressor, driven by a motor through v-belts, was set up, above which on a board were placed an ordinary service pipe, ground clamp, main switch, meter with a test link cabinet, and conduit to the motor, terminating through a drip loop, to show a moisture proof job. By means of a valve on top of the compressor, pressure was built up to overload the motor, even to a stall. By this means it was shown how long it would take to blow fuses, rated on starting current, and how the motor might burn up before fuses blew.



A gruelling test to V-belts conducted as a sales stunt and also to prove the durability of this type of drive for industrial applications.

Then by swinging a trap door on the rear board, a magnetic switch was thrown across the line by means of a double throw switch concealed back of the board, and either a float switch, a pressure switch or a push button, swing from around the back on a bracket, could be used to operate the motor, and when overloaded, the thermal cutout of the magnetic switch killed the line before damage to the motor could result.

Such visual demonstrations makes it easy to sell a good wiring job, the California Electric Works, finds. In selling a remodeling job it serves to clinch arguments for the ultimate economy of a fully protected wiring installation.

This company likewise recently equipped a truck with all necessary wiring supplies for a fair sized contract job so that it could go to the scene of a job and work uninterrupted with all tools, fittings, and material on hand, even to the making out of the bill and collecting for it.

San Diego aspires to be an industrial center, but as yet is not in any sense an industrial city. The amount of business of this class available is small, and competition is of that type that prevails wherever there are many times more contractors than jobs to do. Therefore it takes an aggressive, a consistent, persistent, and yes, a cheerful selling effort all the time to support even so compact and efficient an organization. As a cooperative enterprise the men are pledged to share the extra effort and the lessened income that hard times have

brought, even as they share the profits when there are some in good times.

A simple little thing, and yet exceedingly effective both for the benefit of the staff itself and for the maintaining of business relations, is a personal visit each man has set for himself on a prearranged schedule, to all of the customers of the firm on off duty time. The shop and wiring men were loathe to do this at first, feeling that to be a job for the sales end of the business, but each has found out that every man in the organization is a salesman of the company these days, and besides it helps to understand what the other fellow in the company is up against. This is what it takes to make a cooperative enterprise like this successful when tested by hard times. It also gives each of the directors a well rounded picture of all of the problems and the activities of their own company.



One of the post-cards sent out periodically to all customers and prospects. It introduces two members of the firm and tells a selling story.



electrical contracting

With which is incorporated The Electragist

S. B. WILLIAMS, Editor

EDUCATE THE PUBLIC

SOME years ago the Society for Electrical Development campaigned against statements in the daily press attributing fires to electrical causes when no other cause was obvious. It was felt that such newspaper items might cause through fear the public to decrease rather than to extend its use of electric service. This campaign, so far as we have been able to observe, has had little effect upon the reporters, but it did have the effect of causing the electrical industry to soft pedal the danger of electric wiring that was not properly installed.

It is our opinion that this was a mistake and that it is time it was corrected. One has only to walk through the electrical departments of the five-and-ten cent and hardware stores in any city to appreciate the vast amount of electrical work now being done by the home-owner. Electricity holds no danger any more to the public, because it has come to believe that anybody can install wiring and if the light or appliance works everything is all right.

The contractors and the inspectors have a mutual interest in this condition and they should work together to instill a little more respect in the public mind for the hazards of electricity. We urge, therefore, that the International Association of Electrical Inspectors and the National Association of Electrical Contractors set up a joint committee for the purpose of promoting publicity on the hazards of electricity, the advisability of having all wiring done by competent contractors, the reason for the National Electrical Code and the local ordinance, the meaning of Underwriter's Laboratories approval and similar subjects.

Incidentally, this same committee could act in an advisory capacity to any local com-

mittee that happened to be proposing a change in ordinance, so as to secure the right kind of publicity prior to introducing the ordinance to the council.

Such a committee also could be of inestimable help to the entire industry in the matter of local publicity regarding dangers in existing wiring in order to promote reinspection with the maximum amount of public acceptance.

CREDIT CONTROL

It is reported that three electrical wholesalers in the northwest have written off their books this year \$300,000 due to failures of electrical contractors.

Of course, these are difficult times. Many of the country's largest and best institutions have failed—businesses that had been accustomed to long lines of credit. In their crash were caught many companies that had extended credit on the basis of past performance.

In other words, while we believe that these wholesalers should be censured, we also feel that there are certain so-called "extenuating circumstances".

Nevertheless, let no one be misled—the \$300,000 was not only lost by the wholesalers, but by the contractors as well.

The failures were caused by expenses exceeding incomes and in a majority of cases, this undoubtedly was due, not so much to insufficient business as to work having been taken at below cost figures. When the latter occurs, it simply means that some other contractor is "gypped" out of a job in which he might have had a profit.

This makes it difficult for good contractors to stay in business. It makes it difficult for contractors to stay honest and not try to beat the specifications.

The wholesalers owe it to themselves as well as to their customers, to be more careful in granting credits, especially on competitive work.

There was at one time a credit control plan that looked as though it would solve this problem, but the national houses got "cold feet" when scared out by their lawyers. Instead, however, of trying to find a way out and accomplish the same end legally, they seemed well-satisfied to take refuge behind legal opinion and do nothing.

Perhaps, now that times have changed the customer's voice can once more be heard. We believe, in spite of all that has been done

to discourage the contractors, they will still welcome any evidence from the wholesalers that they are sick and tired of doing business in such a haphazard manner.

The wholesaler's national association has appointed a committee to confer on mutual problems with the National Electrical Contractors' Association. While the wholesalers have not named these problems, perhaps they will include credit control.

EMPLOYERS OF UNION LABOR

ORGANIZED labor has stated one of its major objectives to be the 5-day, 30-hour week.

This undoubtedly is going to find its way into the building trades sooner or later—and how is it going to be met?

There is no question but what the 5-day week, provided the other trades on the job work the same hours, is of advantage to the electrical contractor in more ways than one.

The 30-hour week or, as it will be, the 6-hour day, on the other hand, may cause many disadvantages to the contractor. There is no need, however, to go into them here.

The big question that must be decided soon is how to meet labor's demands. The large union electrical contractors had a national organization, but it did not last. Now, they are disorganized.

If contractors are to negotiate successfully with labor they should be organized in order to be able to insist upon a national program. The worst of disorganized units is that the union can gain its point here and there without any resistance and pretty soon it has its own way.

This should not be taken to mean that contractors should resist all of labor's requests or demands. It means that there should be some central agency that has the time and ability to study labor's demands and to properly evaluate them from the standpoint of the employing contractor. It means that the contractors should never negotiate a change in working hours, wages or labor management until they have had the advantage of expert opinion.

If the union contractors, and they are the only ones with something at stake in this connection, would pledge to the National Electrical Contractors Association but half of the dues they paid to the Guild this work could be accomplished.

This is a good time to begin thinking

about such an organization as part of the N. E. C. A. It won't be long before it will be needed.

HOW TO GET MORE USAGE

IN a number of recent talks by public utility men stress has been laid upon the necessity for securing lower cost wiring in order to promote the use of electricity.

We agree with the principle that increased usage of electricity is necessary for a continuity of business for the electrical contractors and the rest of the industry. If the usage remained where it is today there would be the same business for the utilities, but outside of repairs there would be little or no wiring or installation of materials. We also agree that whatever can be done to lower the cost of wiring with safety should be done.

It is our contention, however, that a far quicker way to promote increased usage is through real promotional rates—rates that are so attractive that people will turn from gas, or coal, or oil to electricity for cooking, water-heating, air-heating, etc. We also contend that if the public utilities took the same viewpoint with respect to their own properties and lines that they now take with respect to inside wiring on customers' premises, their investment would be much lower and the rates correspondingly so.

The contractor's charges for wiring are controlled by competition. He has to use every ounce of efficiency possible to come out on the right side of the ledger. The utility, on the other hand, has no competition to keep its costs down. It does its own wiring and line stringing and the cost is investment on which it may earn 8 per cent during its lifetime.

On the other hand, we still wonder if the way to approach a larger market is through chiselling at the other fellow's prices. The charge that wiring is too expensive is bound to bring the counter-charge that rates are too high. Will such charges encourage the public to buy more wiring so it can use more energy?

The problem we are facing is not so much one of the high costs as it is competition from other industries. If we want to sell electric cookery our competition is gas, coal and oil—not the price of range wiring.

Why can't people see that the big job is one of fighting together as an industry for a larger share of the public's dollar?

\\ code chats //

A MONTHLY DISCUSSION OF WIRING PRACTICE AND QUESTIONS OF INTERPRETATION, PRESENTED WITH A VIEW TOWARD ENCOURAGING A BETTER UNDERSTANDING OF THE NATIONAL ELECTRICAL CODE.

CONDUCTED BY F. N. M. SQUIRES
ASSISTANT CHIEF INSPECTOR, N. Y. BOARD OF FIRE UNDERWRITERS

SINGLE vs. DOUBLE BRAID WIRE IN CONDUIT

In the 1931 Code under Article 5, Section 503, Table 1, it states that 3 No. 12 wires are allowed to be installed in a 1/2-in. conduit. Is it the intention of the Code to allow 3 No. 12 double braid wires to be installed in 1/2-in. conduit as well as 3 No. 12 single braid?

Yes, Tables 1, 2 and 3 permit the number of double braid wire indicated to be placed in the specified conduits. No attention is paid in 503-q as to whether single or double braid insulation is used. The requirements covering this point appear in the second sentence of 503-l, wherein it states that double braid shall be provided for conductors larger than No. 8, and for all twin, twisted, or multiple conductor cables.

HEIGHT OF CUTOUT BOX

Is a 2-circuit cutout placed 7 ft. 6 in. from floor, in hall on second floor of an apartment, too high and does the Code make any provisions on the height as long as same is accessible?

Rule 805-g, last sentence requires that all protective devices be placed in "readily accessible locations." Article I, Definitions, defines "Readily Accessible" as "Capable of being reached quickly, for operation, renewal, or inspection, without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, chair, etc." This quite clearly states that the location must be within reach of a person of average height when standing on the floor.

Cutouts should be kept up high enough to be out of the easy reach of mischievous children. In order to

accomplish this, most inspection departments are willing that they be placed so high that resort to a chair becomes necessary. However, a strict interpretation of the Code would limit the height to about 7 feet and 7 ft. 6 in. would be too high to meet such an interpretation.

CLOSING KNOCKOUTS IN BOXES

It had been thought that all electricians knew that all unused knockouts in outlet boxes and cutout cabinets, etc., had to be closed; yet inspectors are continually finding and reporting this defect and of late there have been numerous inquiries from electrical contractors concerning this.

Rule 703-m is plain and definite on this and not hard to find in the Code. It requires that "Unused openings in

boxes, cabinets and fittings shall be effectively closed by metal plugs or plates — — ". Then, after noting that it said that the openings have to be *effectively* closed, notice that it requires that these plugs or plates have to afford "protection substantially equivalent to that of the wall of the fitting".

From the last part of the above it would be realized that the pair of shingle nail washers commonly used for closing knockout openings does not afford the protection equivalent to the wall of a No. 14 gauge outlet box.

If inspectors would realize this and effectually require adherence to the Code rule it would probably pay the metal box manufacturers to punch out knockout closing plates for the trade. These would, of course, have a hole punched through the center to put the screw or bolt through.

SIZE OF GROUNDING CONDUCTOR

In wiring a residence I used 3 No. 1 wires in 1 1/2 in. conduit and a 100 amp. meter switch, grounding with No. 6 wire in a 1/2 in. galvanized conduit. The conduit is bonded to the ground wire at both ends. Is this a large enough ground?

The allowable carrying capacity of No. 1 wire is 100 amp. To ground this wire (which is the neutral of our distribution system) we apply rule 907-c. One-fifth of 100 amp. is 20 amp., so our ground wire must be sufficient for this, but 907-c says we must not use smaller than No. 8. Thus the No. 6 is large enough so far.

For grounding the 1 1/2 in. service conduit, we apply rule 907-o, and here



A LOOP JOB: An oil burner installation with armored cable neatly taped together and gracefully looped over the water-pipes. This is one the inspector caught.

Electrical Contracting, December, 1932

Use GENERAL ELECTRIC FLUSH TUMBLER SWITCHES *and* PLATES



General Electric makes a complete line of flush tumbler switches and plates, designed to meet every installation requirement whether for home, office or commercial structure.

G-E Flush Tumbler Switches, made in combinations of single pole, double pole, three and four-way units, are produced either in porcelain or molded compound.

The construction of the totally enclosed molded switch box seals in the mechanism and protects moving parts from dust or damage. All G-E Switches have Textolite handles with "off" and

"on" indicators. Large binding screws and wide mounting ears make for easy installation.

G-E Switches have a reputation for ruggedness, dependability and long service. Use them on your next wiring installation. Your nearest G-E Distributor can supply you with G-E Flush Tumbler Switches. For further information see him or write Section D-3212, Merchandise Department, General Electric Company, Bridgeport, Conn.

Use G-E Textolite Plates with G-E Flush Tumbler Switches.

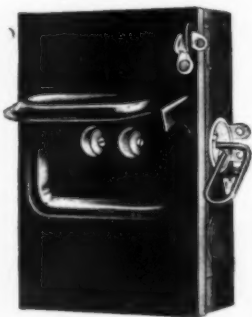
GENERAL ELECTRIC

WIRING DEVICES

MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

MURRAY

SAFETY SWITCHES



ACCESSIBLE
MAIN FUSE
SIDE HANDLE
OPERATED
METER SERVICE
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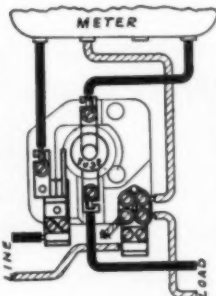
TYPES FOR ALL REQUIREMENTS



30 AMP. 2 AND 3
WIRE, SINGLE PHASE
SWITCHES, A. C.
ONLY, FOR NEW
WIRING SEQUENCE,
SWITCH-METER
FUSE.



BASES ARE NOT
MOUNTED FLUSH
WITH BACK OF CAB-
INET. TERMINALS
ARE MOST ACCESSI-
BLE AND KNOCK-
OUTS IN BACK OF
CABINET ARE READ-
ILY REACHED.



PLENTY OF WIRING
ROOM ASSURES EASE
IN ATTACHING CON-
DUIT TO CABINET
AND WIRES TO CUT-
OUT. SAVED TIME
IS SAVED MONEY.

EASY WIRING IS CHARACTERISTIC OF
MURRAY SWITCHES
NEW CATALOG READY—COPY SENT ON REQUEST

METROPOLITAN DEVICE CORPORATION

1250 ATLANTIC AVENUE
BROOKLYN • NEW YORK

we find that for 1½ in. conduit, we need a No. 6 wire or a ½ in. pipe. Again this is all right so far.

For grounding the interior conduit or cable armor, we apply rule 907-n and find that with the 100 amp. service fuse ahead of the equipment, we need a No. 8 ground wire or ½ in. conduit. Therefore, No. 6 wire in ¾ in. conduit will be satisfactory in this case. Of course, ½ in. conduit would have been large enough, but no one will quarrel about using a larger size.

SOCKETS SUBJECT TO HEAT

As has been mentioned previously in these columns, some inspection departments are prohibiting the use of brass shell sockets in show windows as well as in store fixtures where lamps larger than 75 watt are used.

This was because of the carbonizing of the fibre socket linings due to the heat of the lamps and the ensuing short circuits and fires.

In some instances the porcelain sockets have proven quite clumsy to use and contractors are inquiring whether or not the new bakelite sockets will be acceptable.

The bakelite as now used for approved sockets will quite successfully stand the heat encountered in the average show window and is not subject to the deterioration suffered by the old style fibre or paper socket linings.



A DENVER ELECTRICAL PIONEER: P. A. Brown, Electrical Automatic Appliance Co., is one of the electrical pioneers of Denver. Before business became localized he sold appliances for many hundreds of miles in all directions. At present most of his business is in construction work rather than in appliances.

YOUNGSTOWN BUCKEYE CONDUIT

GLASSY SMOOTH
INSIDE FINISH

AN UNOBSTRUCTED
RACEWAY



HOT GALVANIZED
ELECTRO GALVANIZED
BLACK ENAMELED

THE YOUNGSTOWN SHEET & TUBE CO.
GENERAL OFFICES YOUNGSTOWN, OHIO

N.E.C.A.

NEWS AND SERVICE INFORMATION

MATERIAL FOR THIS DEPARTMENT IS SUPPLIED BY THE HEADQUARTERS STAFF OF THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
420 LEXINGTON AVENUE, NEW YORK, N. Y.

President, L. E. Mayer
14 North Franklin Street, Chicago, Illinois

Vice President, Earl N. Peak
1603 West Main Street, Marshalltown, Iowa

DIVISIONAL EXECUTIVE COMMITTEEMEN

Eastern Louis Kalischer 288 Livingston St. Brooklyn, N. Y.	Central F. T. Langford 511 S. Third St. Minneapolis, Minn.	Western Canadian J. H. Schumacher 344 Main Street Winnipeg, Man.	H. B. Frazer 250 N. 11th St. Philadelphia, Pa.
Southern D. B. Clayton 844 Martin Bldg. Birmingham, Ala.	Mountain R. R. Reid 1957 South 5th East Salt Lake City, U.	At Large E. D. Brown 2470 Grand River Ave. Detroit, Mich.	G. M. Sanborn 309 N. Illinois St. Indianapolis, Ind.
Southeastern W. W. Ingalls 315 S. W. 10th Ave. Miami, Florida	Pacific F. O. Sievers 468 5th St. San Francisco, Cal.	A. C. Brueckmann 314 Keyser Bldg. Baltimore, Md.	W. J. Squire 401 Wyandotte St. Kansas City, Mo.
Great Lakes R. J. Nickles 109 W. Main St. Madison, Wis.	Eastern Canadian R. A. L. Gray 85 York Street Toronto, Ont.	J. A. Fowler 118 Monroe Ave. Memphis, Tenn.	General Manager Laurence W. Davis 420 Lexington Ave. New York City

Contractors Organized for Industry Welfare

referred back through one objector in the last session of congress. The bill at present retains its position on the consent calendar for reintroduction—three objectors will be required to refer it back the next time it is called up on the floor of the house.

The bill can be expedited if a special rule for its reintroduction be obtained from the committee on expenditures in the executive departments. The congressman from your state can obtain such special rule from the chairman of that committee, if you bring to their attention the vital interest of all contractors in your state in its passage.

Now is the time, when senators and congressmen can be approached personally, to obtain their promise of support. You must do this—no one can do it for you. Do not put it off—you cannot do anything more important for the future of your business.

NECA COMMITTEES APPOINTED

President Mayer has announced the appointment of the chairmen of NECA Committees for the ensuing year, as follows:

Chairman	Committee
L. E. Mayer.....	Publication
Earl N. Peak.....	.....National Electrical Code
Louis Kalischer .....	.....Credit and Accounting
D. B. Clayton.....	.....Cost Data
W. W. Ingalls.....	.....Legislation
R. J. Nickles.....	.....Central Station Relations
F. T. Langford.....	.....Membership
R. R. Reid.....	.....Standardization
F. O. Sievers....	.....Credentials
R. A. L. Gray.....	.....Motor Distribution
J. H. Schumacher..	.....International Relations
J. A. Fowler.....	.....Wiring Methods
E. D. Brown.....	.....Electragist Standards
G. M. Sanborn.....	.....Trade Policy
A. C. Brueckmann.....	.....Liability Insurance
.....Bonding Companies	.....Engineers
H. B. Frazer.....	.....General Contractors
.....Industrial Development	.....Architects
W. J. Squire.....	.....Standard Symbols
.....Inspection and Reinspection	.....Federal Government Contacts
Approval Bureau	.....H. B. Frazer.....

NECA-NEMA JOINT CONFERENCE

On September 27 the National Electrical Manufacturers Association transmitted to the other national associations a statement of "Policies of Nema on Regulatory Legislation Affecting the Electrical Industry," and expressed a willingness to discuss with the other groups the matters treated therein.

As a result a conference of committees from National Electrical Contractors Association and Nema was formulated and the conference arranged to meet in Chicago on November 29. The N.E.C.A. committee members were President L. E. Mayer, J. A. Fowler, G. M. Sanborn, R. J. Nickles, F. T. Langford, George Andrae and General Manager L. W. Davis. Representatives of the manufacturers on the Nema committee included C. E. Wilson, vice-president, General Electric Company; Walter Robbins, chairman of the board, General Cable Corporation; D. Hayes Murphy, president, Wiremold Company; S. L. Nicholson, acting vice-president, Westinghouse Electric & Manufacturing Co., and A. W. Berresford, managing director, Nema.

The subjects to be discussed by the conference included coordination of activities for local and state legislation embodying National Electrical Code minimums, adequate licensing legislation and local and state regulations controlling the sale of sub-standard electrical materials.

RENEW FIGHT AGAINST BID-PEDDLING

The Goss Bill, H. R. 9921, as amended and reintroduced in the first session of the U. S. 72nd Congress, is one of the most important legislative measures designed to protect the interests of all the sub-contract trades in the construction industry. Its purpose is to stop the vicious bid-peddling by unscrupulous general contractors which is not only destroying the rewards of sub-contractors on hundreds of millions of dollars of Federal Government work, but is menacing the integrity of our whole industry.

This bill was referred to the house committee on expenditures in the executive departments; it was reported on favorably by that committee and placed on the house calendar. It was

"It Costs So Little, Mrs. Jones"

She has long wanted that extra convenience outlet. But she thought it would cost too much. So when you tell her how inexpensive it really is to have her home wiring modernized, she's amazed—the sale is half made.

Start the sale at the wall plate. The

P&S-Despard Line of Wall Plate Merchandise

makes it *easy* to sell home wiring modernization jobs. Night lights in the bath room and guest room—pilot lights for the flat iron and the cellar circuit—radio outlet which does away with the unsightly tangle of wires in the living room—these are wiring conveniences which people *want*.

The P&S-Despard Line of Wall Plate Merchandise

minimizes both the cost and bother of installation.

Three services may be supplied if desired from a single-gang box—two, three, four, five or six services from a two-gang box. You seldom have to disturb the plaster to give the customer what she wants. Your labor is minimized, your price is moderate, yet your profit is *ample*. So everybody is satisfied!

Write *now* for the P&S-DESPARD line catalog with its 112 wiring diagrams of easy-to-sell and quick-to-install combinations. Get the *facts*. Compare the prices of this material *installed*. Ask your wholesaler to show you *samples*. There's plenty of home wiring modernization business to be had right now—right in your own neighborhood. Go after it. Start the sale at the wall plate with

The P&S-Despard Line of Wall Plate Merchandise

Pass & Seymour, Inc., Solvay Station, Syracuse, N. Y.



LINE OF WALL-PLATE MERCHANDISE

WADSWORTH

ACCESSIBLE FUSE

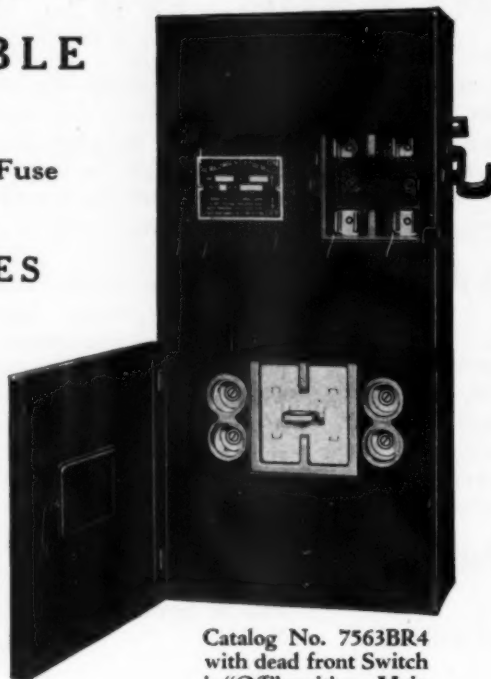
(Switch Meter Fuse
Sequence)

SWITCHES

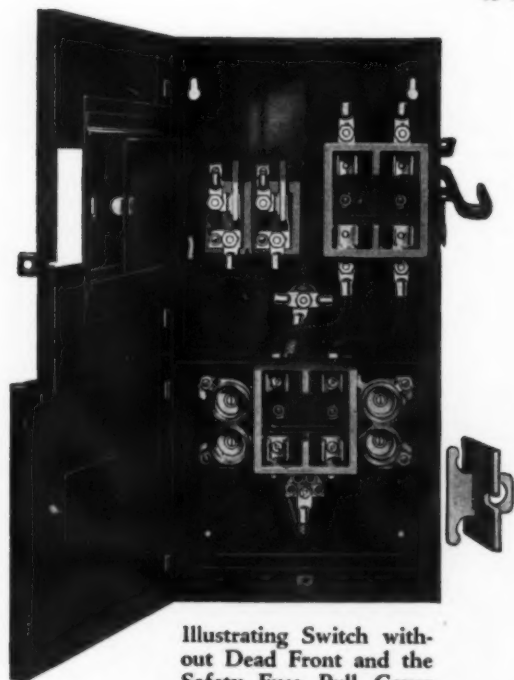
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Range Circuit and
with or without light-
ing circuits.

Designed to meet the
most rigid electrical re-
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Catalog No. 7563BR4
with dead front Switch
in "Off" position. Main
fuses accessible. Safe
to renew fuses.



Illustrating Switch with-
out Dead Front and the
Safety Fuse Pull Cover
removed.
Obtainable with 4, 6 or 8
lighting circuits.

You Can
See
Reach
Inspect
All Parts of
Wadsworth
Safety
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Thus, much of your
unnecessary wiring
troubles on New or
Rewiring jobs are
eliminated.

The WADSWORTH ELECTRIC MFG. CO. INC.
Covington, Kentucky.

A.S.A. CODE INTERIM REVISION STATUS

The following statement from the American Standards Association under date of Oct. 27, 1932, has an important bearing on the status of "Interim Revisions" of the National Electrical Code:

Mr. Laurence W. Davis, General Manager, Association of Electragists, International, New York, N. Y.
Dear Mr. Davis:

Referring to your letter of April 27, 1932 (CE 78), and my acknowledgment of May 2, in regard to Interim Revisions of the National Electrical Code, this subject was referred to our Committee on Procedure. The minutes of this Committee dealing with the matter reads as follows:

"Interim Revision, National Electrical Code. The formal letter from the Association of Electragists, under date of April 27, 1932 (CE 78), objecting to the issuance of interim changes in the National Electrical Code, had been circulated to the Electrical Standards Committee and referred to the Committee on Procedure.

"Mr. Small gave a detailed explanation of the methods by which 'Interim Revisions' of the Code had been issued and the considerations which had led to these arrangements. It was not the intention of the sectional committee to make such interim changes a part of the official approved code, but to put the world formally on notice, so to speak, that such amendments were almost certain to be introduced into the official text of the next edition of the code.

"After thorough discussion, it was unanimously agreed that these 'Interim Revisions' since they were being issued without any action of the Standards Council were not in any sense officially a part of the National Electrical Code.

"(Mr. Small pointed out that in certain states and cities the Code had been given a certain legal status, the reference being to the National Electrical Code as approved by the American Standards Association!)

"It was further agreed that it was best for the time being to take no formal action in regard to bringing the issuance of 'Interim Revisions' strictly within ASA procedure, it being the understanding that steps would be taken to make it clear to the public just what was the status of the 'Interim Revisions.' Furthermore, the matter was one which could well be considered in process of development, which would probably work out satisfactorily within a reasonably short time. Mr. Small stated that at the next meeting of the sectional committee he would undertake to bring about a complete clarification of the whole subject with the policy involved. In the meantime he would start a movement to change the name from 'Interim Revisions' to 'Tentative Interim Amendments' as being less likely to lead to misunderstanding."

The report of the Committee on Procedure will be presented to the Standards Council in the next meeting, and I shall take pleasure in letting you know of the action of the Council.

Yours very truly,
P. G. AGNEW,
Secretary.



A MOTOR DEAL BUILT FROM THE DEALER'S STANDPOINT

THIS storm we've all gone through wasn't an accident. It was very largely the result of a lot of people deciding that things as they were, were not good. Already we are well on the way toward new and better things. Bad trade practices, unfair manufacturer-dealer arrangements, wrong competitive conditions, are being rooted out by fair play and cooperation. Wherever this occurs, the smart dealer will do well to investigate.

Kimble offers motor dealers a new deal for a new day—a good name, real cooperation, superior motors, fair margins—teamwork all along the line—teamwork that wins the motor game. A deal limited only by your own willingness and ability.

The story is too big and new to tell here. Mail the coupon and get it direct. And do it now, for the ones who replied earlier are securing the best spots for themselves. Address J. E. Eddy, President, Kimble Electric Company, Damen Ave. at 14th St., Chicago.

Kimble motors, long recognized for their skillful design and rugged construction in highly specialized applications are now offered in all standard A. C. and D. C. models from $\frac{1}{4}$ to 20 hp. Full ball bearing construction. N. E. M. A. standardized frames. 40° rating. Only the Kimble experience of special precision motor building and the modern Kimble facilities for manufacture make possible Kimble quality and dependability at competitive prices.

KIMBLE BALL BEARING MOTORS

Mr. J. E. Eddy, President, Kimble Electric Company,
Damen Ave., at 14th St., Chicago, Illinois.

Dear Sir:

I am interested in the Kimble Dealer Franchise. Please give me complete information.

Name _____		
Company Name _____		
Address _____		
City _____	State _____	Tel. No. _____
New Agent For _____		Motors _____

CONTRACTING news

INFORMATION OF INTEREST TO ELECTRICAL CONTRACTORS
CONSISTING OF ITEMS OF NEWS, SHORT ARTICLES, PRACTICAL
IDEAS, ETC., OUR READERS ARE INVITED TO CONTRIBUTE TO
THIS DEPARTMENT

CONDUCTS CAMPAIGN AGAINST SUB-STANDARD MATERIAL

The Electrical Department of the Electric League of Washington, D. C., is conducting a survey among department, wholesale, retail and hardware stores to determine the amount of electrical equipment and merchandise not approved by the Underwriters' Laboratories, being offered for sale.

In addition to making the survey, the department is waging a campaign against the sale of this material. Department stores, in particular, are urged to specify the Underwriters' Laboratories approval shall be placed on all electrical appliances and equipment sold.

All of the larger department store outlets are cooperating 100 percent and are not only designating that their merchandise have the approval of the Underwriters' Laboratories, but in many cases are insisting a seal or sticker indicating approval be attached to each article.

To date the entire campaign has been educational, no compulsory action being taken.

REWIRING CAMPAIGN FOR OLD HOUSES

A campaign for the rewiring of old houses has been started by the Electric Service League of Toronto, Canada, in order to induce the owners to modernize electrically, and to improve the rentability of the old houses.

This campaign will feature newspaper advertising, direct mail literature on rewiring and a field staff selling work on prospects. A special offer of newspaper advertising will be made to owners who will rewire

to Red Seal standard, and other special publicity offered those who add wiring, even if it does not come up to Red Seal standard. At the start the campaign will be directed to owners of unoccupied houses for rent.

SAN FRANCISCO ELECTRAGISTS REORGANIZE

The San Francisco Electragists at a specially called meeting Oct. 27, reorganized, and reducing its dues, added to its membership. The meeting was presided over by Lloyd Flatland, president of both the San Francisco Electragists and California Electragists, with a program in charge of Tom Bennett.

The speakers were H. C. Reid, who discussed the California con-

tractors' license law and the necessity for an organization to see that electrical contracting was given attention under provisions of that law; Victor Lemoge, who reported on meeting with the Industrial Association, Impartial Wage Board as well as code and ordinance activities for the contractors; W. A. Cyr, who reported on a meeting of the California State Chamber of Commerce Building Congress and its action with respect to the uniform Lien Law, and other matters; C. B. Kenney, who talked on the values of association work; and Clyde Chamblin, former president A.E.I., who spoke on the national association work.

1-IN. MINIMUM SERVICE FOR MINNEAPOLIS

A committee of the Electrical League of Minneapolis is working upon a revision of the city code. Among the recommendations are the requirement of 1 in. conduit as a minimum size service for all residential buildings containing more than three rooms and in buildings not more than four-plexes. The committee is also considering recommendation of a minimum service of three No. 6's.

Among the other changes recommended is the use of circuit breakers in place of branch circuit fuses and the increase where such breakers are used from 10 to 12 outlets per circuit and from 1000 to 1500 watts for each branch circuit.

Some consideration is being given to the use of white conduit and fittings only.

DENVER'S NEW CODE HAS ADEQUACY STANDARDS

Denver's new electrical code has been completed and will become effective Jan. 2, 1933. It follows the National Electrical Code with certain modifications and amendments.

The all-metal system of wiring, effective in Denver since 1908, will be continued. The local committee, under the chairmanship of W. A. J. Guscott established adequacy standards which are similar to those recommended by the International Association of Electrical Inspectors.

Other changes in the Denver code include 1-in. minimum on service conduits, except for installations consisting of a single service branch

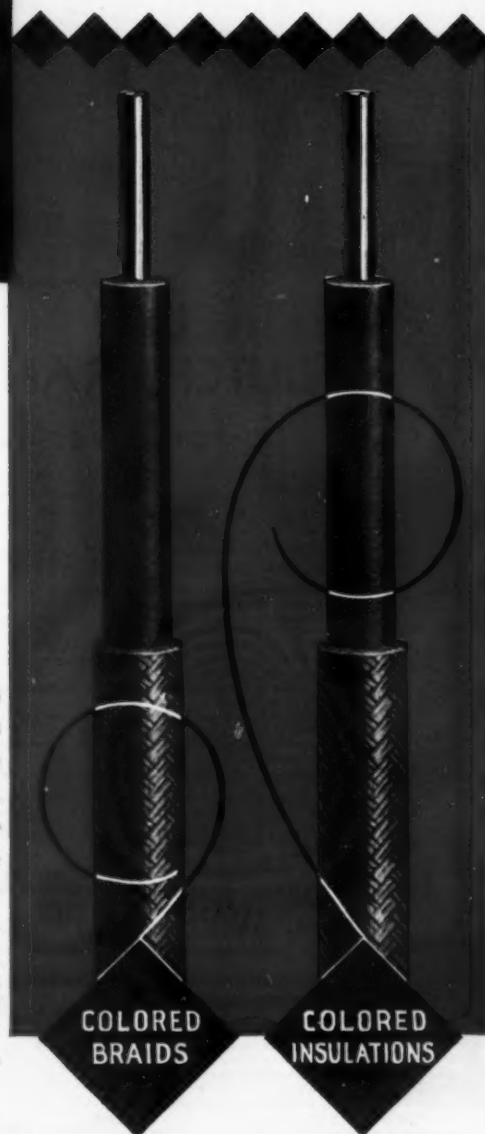


CAN'T BE DOWNED: James Corr, who has been an Omaha contractor for 26 years. Street cars were rerouted so they no longer pass his door and street traffic has diminished, consequently store and shop business has fallen off. But Corr puts on his hat, smiles, and goes out to meet the business.

DOUBLE VALUE

at
NO
EXTRA
COST

G-E Code Wires provide ease, safety and economy in installation at no additional cost. Each grade of wire is manufactured with the same uniform centering of wire in its rubber jacket — the same tough braid — the same hard, smooth and clean moisture-proof finish to insure easy pulling. Overall diameters are the minimum allowed by the "code". Every coil is tested, every foot exceeds code requirements. Use G-E Code Wires for every wiring job. It costs no more and assures "trouble-free" installation. For further information see the nearest G-E Distributor or write direct to Section W-3212, Merchandise Department, General Electric Company, at Bridgeport, Connecticut.



GENERAL ELECTRIC

CODE WIRES

MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

Hill Electric Company
ELECTRICAL ENGINEERS AND CONTRACTORS
2800 South San Pedro Street
Los Angeles, Cal.
February 19, 1932

Van Cleaf Bros.
7800 Woodlawn Ave., Chicago, Ill.

Gentlemen:

We have been using Van Cleaf Bros. tape for over ten years and find both the friction tape and splicing compound to be of excellent quality.

We have always found them to contain all the qualities that go to make it easy working, that is our reason for specifying "Dutch Brand" when placing our orders for tape.

Yours very truly
S. F. Hill
Hill Electric Company

Says S. F. HILL
Hill Electric Company, Los Angeles, Calif.

"We Have Used DUTCH BRAND Tape for Over Ten Years"

EASY working, to which Mr. Hill refers in his letter, does not merely mean tape that handles easily, without messing up the fingers and raveling, but also that it must possess many other quality factors. DUTCH BRAND, the "Extra Service" tape "stands up." Ten years of service ought to prove it to anyone. Here are the reasons why Mr. Hill and thousands of other contractors use DUTCH BRAND Friction Tape:

1. Manufactured by our own 4 ply saturation process. Not 2 coats or 3 coats of compound, but 4 piles of rubber uniformly applied that give it exceptional adhesiveness and long life in any climate.
2. The 4 ply process eliminates pin holes and insures extra insulating safety. One thickness of this tape resists 2200 volts.
3. The edges do not fray. Every inch is clean cut and usable right down to the core, no waste.
4. It is made on a base of tough close-woven sheeting that brute strength can't easily break.
5. Its great adhesiveness is always fresh. It lasts and is not of the goovy or messy type. It won't dirty the hands.
6. It is neatly packaged in small sizes for the consumer and shop sizes for the contractor.

You don't have to buy DUTCH BRAND to find out how good it is. Just clip the coupon below and we will send you liberal size free test rolls. Give the tape to one of your men. Make a few tests yourself, and you will learn why DUTCH BRAND is so popular among contractors that want to do a good job at lower cost.

DUTCH BRAND Friction Tape, Rubber Tape and Soldering Paste are sold by electrical jobbers everywhere

VAN CLEEF BROS. Established 1910

Manufacturers DUTCH BRAND Friction and Rubber Tape and Soldering Paste
Woodlawn Ave., 77th to 78th Streets, Chicago, U. S. A.



It contains 80% more live, new rubber.

Van Cleaf Bros.
Woodlawn Ave., 77th to 78th Sts., Chicago, Illinois
Gentlemen: We would like to test the "Extra Service" qualities of the following DUTCH BRAND products:
☐ Friction Tape ☐ Rubber Tape ☐ Soldering Paste
Name.....
Kind of Business.....
Street Address.....
City..... State.....
Jobber's Name.....



DUTCH BRAND
Soldering Paste

A scientific mixture. Cleans as it works. Holds solder fast. Less paste required per job.



DUTCH BRAND FRICTION TAPE



MOVES TO A NEW BUILDING: The widening of a stretch of University Avenue in St. Paul, Minn., and the necessary remodeling of store fronts prompted A. J. Scheiderbauer of the University Electric Co. to move into a made-to-order new building not far from his old location where the company did business for fourteen years. The new place is much bigger with full facilities for a complete display of fixtures which line of business is pushed along with wiring.

circuit; rigid metallic-coated conduit or tubing for all new installations; non-metallic surface extensions in accordance with most of the provisions of the new Section 516.

Feeder sizes are to be determined by two methods. The first is in accordance with Section 613. In the second method, the total number of branch circuits will be used to determine size of feeders. If this method indicates that large copper is required, the city electrician will determine which of the two methods shall apply, or whether a compromise between the two methods shall prevail.

All switchboards must be of the dead end front safety type.

The former Denver ruling which called for No. 12 wire on all electric sign wiring has been dropped.

USE OF EXPLOSION PROOF PANEL-BOARDS PERMITTED

An amendment to the hazardous location rules of the National Electrical Code has been passed as an interim revision permitting under 3203-b the installation of panelboards when of a type approved for use in explosive atmospheres.

REDUCE INSPECTION COST IN YOUNGSTOWN TERRITORY

In order to reduce the cost of inspection in the outlying territories served by the Youngstown Division of the Ohio Edison Co., and the Ohio Inspection Bureau, the Wiring and Code Committee of the Electrical League of Youngstown, Ohio, has



Fidelity National
Bank & Trust
Company Bldg.
Kansas City, Mo.
Architects:
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AMERICAN STEEL & WIRE COMPANY

ELECTRICAL WIRES AND CABLES

Big Figures in their Field

Hand in hand with the greatest building projects of the day goes the selection of American Steel & Wire Company Rubber-Covered Electrical Wires and Cables. Interior wiring is so important that the best grade must be installed in order to eliminate hazards.

Meeting Underwriters' Specifications is one thing; building absolute uniformity into wires and cables is another. When you specify either Americore or Amerite Rubber-Covered Wires you are completely assured of protection against defects.

1831

100 YEARS
OF PROGRESS
IN WIRE MAKING

1932

AMERICAN STEEL & WIRE COMPANY

208 South LaSalle Street, Chicago
94 Grove Street, Worcester

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

AND ALL PRINCIPAL CITIES

Empire State Bldg., New York
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Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco

Export Distributors: United States Steel Products Company, New York



Form VW and VS—VW (electrically-wound) and VS (synchronous motor) switches, moderately priced, dependable. Any commercial frequency. Sunday and holiday cut-out. Manual operation without disturbing sequence.

NOW...

Precision engineering...fine workmanship...and low prices. These you have a right to demand in time-switches today. You will find them...as so many others have already done...in Sangamo's complete line of time-switches.

A few representative members of the Sangamo time-switch family are shown on these pages. Type TC...wound electrically and controlled by an eleven-jeweled Hamilton escapement. The moderately priced, electrically-wound VW. The VS synchronous motor-switch. And other items that are winning favor everywhere.

All Sangamo time-switches are guaranteed by Sangamo, leading manufacturer of high-grade electrical equipment for thirty years. Sangamo engineers are constantly studying time-switch requirements in order to meet every possible need. Write for literature.



Form VW-22

The VS or VW single-pole, double-pole or triple-pole, *double-throw* time-switches meet all requirements for single or dual thermostatic controls, auxiliary relays or special watt-hour meter connections.

Type TCHE

The advanced time cut-off, with omitting device, permits wide variations in daily, single-circuit control. Operations any day can be omitted entirely, or "off" operations can be advanced from regular time on any days desired.

Duplex

Duplex time-switches...independently controlling two separate circuits. Admirably suited for control of apartment house lighting, Neon and flood lighting, poultry house lighting, or any a.c. two-circuit combination.

SANGAMO ELECTRIC COMPANY • SPRINGFIELD, ILLINOIS

A Complete Line
of
SANGAMO
TIME
SWITCHES

\$24.00

AND UP...RETAIL



Type TC—Where only the very best switch is good enough... this type is recommended. Electrically-wound... 11-jeweled Hamilton escapement. Independent of frequency and voltage variations. Conduit-connected base.



Outdoor

A rugged cast-iron, outdoor, weather-proof case, cadmium plated, aluminum painted, with sponge rubber housing gasket, supplied with VSO time-switch. Same case can also be provided for form VWO and TCO when required.

Astronomical Dial

For form VS or type T. Made for different latitudes for any city in the United States. Operating levers follow sunset and sunrise curves. An auxiliary lever provides a means of cut-off between 11 p.m. and 1 a.m. when required.

Defroster

The Sangamo Defroster, with self-starting synchronous motor, automatically defrosts any electrically-operated refrigerator at any hour of any day selected. Recommended by leading refrigerator engineers everywhere.

SANGAMO ELECTRIC COMPANY • SPRINGFIELD, ILLINOIS

FRINK SIGNS

Frink Illuminated Signs have become recognized as standard for visibility and beauty. Each is designed specially for an intended purpose. Infinite display treatments are possible.

The
FRINK CORPORATION

23-10 Bridge Plaza South
Long Island City, N. Y.


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Wall Outlets

down to a price
Mr. Average Man

Can Afford



Lower cost wall outlets have been demanded for years! Now that they are here—what are you doing about it?

Are you going to take advantage of the tremendous built up demand for lower cost wall outlets? People who never would be even prospects for regular type outlets will BUY Electrotrim! Are you going to sit back and let someone else make more than 35% Profit on the material plus BIG installation Profits?

Electrotrim is going over BIG. Already thousands of the leading jobbers and contractor dealers are SELLING it! In addition, many of the largest Public Utilities are actively promoting and selling Electrotrim.

Don't delay ANOTHER Day. Get the full details by returning the coupon NOW.

ELECTROTRIM, Inc.
Union City, Ind.

ELECTROTRIM

Electrotrim is the first and ONLY 2-wire non-metallic surface extension material approved by the Underwriters' Laboratories. It is finished in four colors to harmonize with any baseboard, moulding or wall to which it is applied. Protected by 5 basic Patents.

For Safety's
Sake — See
Your Electrical
Contractor

Without obligation, rush me full details on Electrotrim and Special

Electrotrim, Inc.
Dept. EC-12
Union City, Ind.

Name Address

formed an Electrical Inspection Bureau to furnish inspection in the outlying territories at cost. The Bureau will adopt the same schedule of fees heretofore charged by the Ohio Inspection Bureau but the mileage charge will be eliminated.

The new Bureau opened on November 15, at which time the Ohio Inspection Bureau withdrew its electric inspection department from the territory.

WASHINGTON UNION CONTRACTORS REORGANIZE

The Institute of Electrical Contractors of the District of Columbia has recently been reorganized with L. T. Souder as president, and Herman Wilson as vice-president. This is an organization of union contractors.

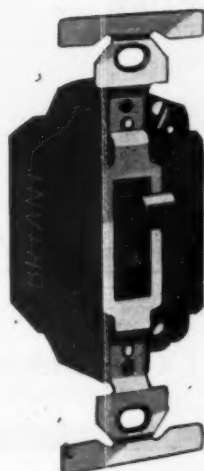
NEW YORK UNION TROUBLES SETTLED

The legal difficulties which have existed between certain members of the New York Electrical Workers' Union and certain of the members and officials of the Union have been settled, and the suit for an accounting of the \$7,500,000 alleged to have



SPECIALIZES IN FIXTURE DESIGN: Louis Vlcek, Sterling Electric Company, Omaha, started in business eight years ago with almost no capital. Now he has thirty employees and is engaged in all branches of electrical construction. Although he does large and small wiring jobs (the Douglas County Hospital with \$50,000 worth of electrical work is a recent example), he specializes in special design fixtures. These are created from original ideas and a study of old prints and magazines as a cue for design.

New Buildings from Old — Mean Jobs for Contractors



No. 4961

BRYANT

4

9

6

1

LINE



No. 4962

THE American Architect, from a survey conducted by them, estimates that the value of modernization plans for old buildings already authorized amounts to \$93,938,000; and the value of contemplated modernization for 1932-1933 amounts to \$133,868,000.

Better lighting — the installation of high wattage type "C" lamps — will be a big part of all modernization plans. Owners of commercial buildings

understand this fact. Contractors can find work in these projects.

Bryant has developed a flush tumbler switch to conquer type "C" lamp loads. Ordinary switches can't. Tests of the Bryant 4961 line on genuine, cold-filament, type "C" loads equivalent to years of service, prove that these switches will not "fuse" nor "hang-up."

Insure a satisfactory job by using the Bryant 4961 line.

A copy of catalog page 78A which describes the complete line will be gladly sent you.

BRYANT



SUPERIOR WIRING DEVICES

Manufactured by THE BRYANT ELECTRIC CO., BRIDGEPORT, CONN.

EC-1232

MANUFACTURERS OF "SUPERIOR WIRING DEVICES" SINCE 1888 — MANUFACTURERS OF HEMCO PRODUCTS

BOSTON
140 Federal Street

... **CHICAGO**
844 West Adams Street

... **NEW YORK**
60 East 42nd Street

... **SAN FRANCISCO**
149 New Montgomery Street

When

You are figuring on installing a new installation or bringing up an old installation to meet the 1931 Code requirements in Oil Refineries, Bulk Plants, Dispensing Plants, Gas Plants, Dry Cleaning Plants, Chemical Works or any place where explosive liquids are dispensed, compounded or stored, or Grain Elevators, Flour and Feed Mills, Textile Mills, Wood Working Plants, Starch Works and other places where explosive dusts are present IT WILL PAY YOU TO USE THE RALCO LINE OF EXPLOSION RESISTING FITTINGS.

No. 52 E. P. Receptacle



This Interlocked Receptacle with Switch is so constructed that the switch cannot be closed until Plug is inserted and pushed to HOME position. The Plug cannot be removed until the Switch is in OFF position, fully meeting code requirements.

The Interlocked Receptacle, Switch and Plug are

listed by the Laboratories. (See Class I, Groups C and D; Class II, Group G, Laboratories File E 10023 Guide Cards No. 365E1-23.)

Maximum Safety. Reasonable Price. Described more fully in Bulletin No. 110. Rating 20 Amperes, 250 Volts, 1 H.P. 250 Volts A.C., 2 H.P. 250 Volts D.C.

No. 52 P. E. Plug

This Plug is provided with separate terminals for connecting the third wire for the protective ground, and a specially designed cord grip. Plug case is cast aluminum. Insulators of both Plug and Receptacle are of the tested and well known RALCO Insulation.



No. ESX Switch

This switch combination has been tested and approved by the Laboratories under the same Classes and Groups as the above Interlocked Receptacle Switch and Plug, and carries the same ratings.

The handle may be changed to meet the various purposes for which it may be used.

Listing shown on Laboratories File E-10023 Guide Cards No. 365E1-23.



RALCO Sealing Fittings sealed with RALCO Sealing Compound have passed the rigid tests of the Underwriters' Laboratories.

The fitting is so designed that by use of RALCO Sealing Compound an approved seal can be made, regardless of the position of the conduit. For use on Class I Groups C and D hazardous locations.

We also manufacture Boxes and Fittings approved for use on Gasoline Dispensing Pumps and for general use in Class I Group D, Class II Group C hazardous locations. (Described in Bulletin No. 120-B.)

RALCO Manufacturing Company
Designers and Manufacturers
125 N. Albany Ave., Chicago, Ill., U.S.A.



24-HOUR SERVICE THEIR SPECIALTY: C. A. Miller (right) and Jos. T. Krivanek of Miller & Krivanek, Inc., Longview, Wash., started in the electrical business five years ago with the slogan "M & K 24-hour Service." During this short time they have built up a fine electrical contracting and repair business by using good material and good workmanship.

been spent by the officers of the Union has been dismissed.

Among the points established for the members by the agreement was free speech in the union and a guarantee of recognition for every member in good standing. Also any member may work for any electrical contractor without first obtaining permission from the union.

NEW OFFICERS FOR WESTERN SECTION I. A. E. I.

At the twenty-eighth annual meeting of the Western Section of the International Association of Electrical Inspectors held in Grand Rapids, Mich., the latter part of September, the following officers were elected: L. L. Johnson, Chicago, Ill., president; E. J. Stewart, Topeka, Kans., first vice-president; John E. Wise, Madison, Wis., second vice-president, and William S. Boyd, Chicago, secretary-treasurer.

HARRISON TO HEAD ESSEX LEAGUE

Philip H. Harrison of Philip H. Harrison & Co., was elected president of the Essex (N. J.) Electrical League for 1933 at its meeting November 17 at the Newark Athletic Club, Newark, N. J. Other officers elected are John Caffrey, Jr., vice-president; Edwin C. Butler, re-elected treasurer; James H. Stapleton, re-elected secretary.

New members of the executive committee are Frank J. Durkin, H. S. Stratton, and Richard H. Osgood.

Buy

Yager's soldering salts and paste in

The New Re-shipper

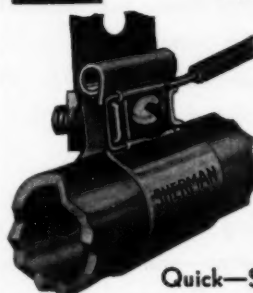
Cartons

These cartons hold 6 one-pound or 12 half-pound cans

And Save Money

ALEX R. BENSON CO., Inc.
HUDSON, N. Y.

2 SHERMAN GROUND CLAMPS



SL Type

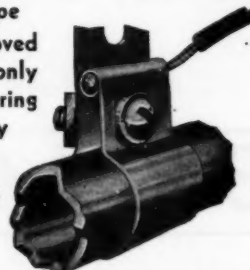
The only approved Clamp perfectly adapted for use with or without soldering—

Quick—Safe—Cheap.

Solder Type
Also approved but for use only with soldering—slightly cheaper.

Both Clamps Patented

Approved



Sold by Jobbers—Free samples on request.

H. B. SHERMAN MFG. CO.
Battle Creek, Michigan

ILLUMINATED



Plainly readable
75 feet away
in daylight
or darkness

* 110 Volt Service



Single gang
Unit No. 7901



ARROW House Number Unit *DISPLAY*



*Metal
Display
with easel.*

A portable
Demonstrator
—Take it
to your
Prospects
in
Apartments
and Homes

20,000,000 Wired Homes are prospects for this installation

—and the above Display Stand SHOWS your prospects just how the House Number lights up when switch is snapped. Switch-and-Warning Light mounted on Board is sample of inside control recommended. Jewel shows RED while Number is illuminated outside. . . Stand is ready-wired with 6-ft. attachment cord to plug in for store display or for home demonstrations by your salesmen. Designed visually to *SELL* a proved-popular item to your CONSUMER market—not dependent on new building. Price of Display Stand complete, \$3.00 ORDERED THROUGH YOUR JOBBER. * * *

ARROW ELECTRIC DIVISION

THE ARROW-HART & HEGEMAN ELECTRIC CO. HARTFORD, CONN.



Threads, while occupying but a small part of each length of conduit, play a very important part in installation. If they fit easily, the job moves ahead rapidly—if trouble results from faulty threads, time is lost and someone loses money. For this reason, the threads on Fretz-Moon Conduit are cut deep, sharp, clean and true—they fit faster and save money. Fretz-Moon Conduit is available in three finishes—ENAMELITE, black enamel; ELECTRO GALVITE, electro-galvanized; HOT DIPPED GALVITE, hot galvanized. Choose from these three.

FRETZ-MOON TUBE COMPANY, INC. • BUTLER, PENNA.

FRETZ-MOON
RIGID CONDUIT

**NEW—EASY WAY TO
MAKE EXTRA
MONEY
—RIGHT ALONG**

Selling Chromalox Replacement Range Units made \$210.36 in 4 weeks for this Reading, Mass. dealer.



GO AFTER REPLACEMENT RANGE UNIT BUSINESS with Chromalox Units. Clapp & Leach sold 54 units in 4 weeks. Altoona, Pa. dealer made \$136.50 in 2 months. Richmond, Va. contractor sold 48 units in 4 months, made \$187.20 profit. Chromalox replacement units are a money-making, depression-proof item. Range owners want to buy them. Easy to install, sizes to fit every make of range, old or new. Write for sure-fire sales plan already in use by dealers; Liberal discounts; free sales helps, etc. No obligation.

MAIL WITH YOUR BUSINESS LETTERHEAD TODAY!
E. L. Wiegand Co., 7585 Thomas Blvd., Pittsburgh, Pa. Without obligation, send us complete data about Chromalox Super-Speed Replacement Range Units and how we can make money selling them. There are approx. elec. ranges in the territory we serve. Check which () We sell elec. ranges () We do not sell elec. ranges. () Send us catalogs about Chromalox-equipped electric ranges.

Signed Position

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You can't afford
to miss a single
issue

Give us your
new address if
you have
moved

**A
ROLL
O'
TAPE**

ELECTRICAL FLASHES
GATHERED AMONG THE
BIG WIRE AND PIPE MEN
BY

ELECTRICAL CONTRACTING'S
FIELD EDITORS

PERRY Watson, ingenious proprietor of the Gridley Electric Co. at Gridley, Calif., not only devises moving displays for his Christmas windows but is sometimes called upon for unique public service. A friend of his complained that a neighbor persisted despite all pleas to play his radio loudly during the middle of the night. Mr. Watkins rigged up an old Ford coil and battery with which this friend could provide sufficient radio interference to discourage his noisy neighbor.

"YOU'RE way high," is a complaint sometimes heard by J. R. Katz of Omaha. This, he says, used to worry him till he got the habit of inquiring just how high is "way high." He found out that this often means only seven or eight dollars on a two hundred dollar job. Sometimes Katz turns a lost contract into a job for next time by showing just why he was higher and how he gives value for the price he asks.

WHEN you feel that business isn't what it ought to be consider Leadville, Colo., where the Klein Schmidt Company is located. These boys are electrical contractors and gun smiths in a town that hasn't so they say, erected a new building in ten years. The price of lead and other minerals has dropped so as to make extensive mining operations unprofitable. But strangely enough these fellows aren't complaining. They just plug away on remodeling and repair work and seem to be making a pretty fair living.

L. B. Van Nuys, of the Central Electric Co., Peoria, Ill., figured out for a customer how he could save for him one hundred dollars a month on his current bills by the installation of transformers to enable him to use the current on his power rate for lighting also. The difficulty was how was the customer going to pay for the installation

"THEY KEEP A - RUNNING"



*5 Horse Power Century Type RS Repulsion Start
Induction Single Phase Motor*

The Motor for **PUMPS • COMPRESSORS • REFRIGERATORS**

Actual service records prove that the operating demands of Pumps, Compressors and Refrigerators are unfailingly met by Century Type RS Single Phase Motors . . . Their High Starting Torque and Low Starting Current meet every severe service requirement of these and similar hard-to-start applications . . . They withstand the effects of moisture and dampness because the windings are thoroughly insulated and are then saturated with insulating varnish . . . Bearings machined from Phosphor Bronze castings. The brushes last—they touch the commutator only while starting.

Century Single Phase Motors are built in standard horse power ratings from 1/8 to 40.

Century
MOTORS

CENTURY ELECTRIC COMPANY, 1806 PINE ST., ST. LOUIS, MO.
Offices and Stock Points in Principal Cities

ALTERNATING AND DIRECT CURRENT, SINGLE PHASE, POLYPHASE, SPLIT PHASE, MULTISPEED
AND SPECIAL MOTORS, RANGING IN SIZE—DEPENDING ON TYPE—FROM 1/8 TO 250 H. P.

EP-13-5

FOR MORE THAN 28 YEARS AT ST. LOUIS

Your name stamped on these books FREE

At no additional cost to you, we will stamp your name or a friend's name, in gold, on the front cover of any of the books listed below. This is a special Christmas offer, limited to acceptance before January 1, 1933.



1. Abbott's NATIONAL ELECTRICAL CODE HANDBOOK

The first handbook of its kind—simplifies the National Electrical Code—explains the rules—groups them for quick, accurate reference. All rules applying to a given job are grouped together so that none will be overlooked. Long and involved rules are restated in simple language. Gives diagrams and definitions to make rules clear. Electrical World says, "So complete a working guide that it may well relegate the code itself to the status of a last court of reference." 460 pages, 4 3/4 x 7 1/2, illustrated, \$3.00

2. Croft's AMERICAN ELECTRICIANS' HANDBOOK

Recently published, a fully revised, up-to-date third edition of this useful handbook for wiremen, contractors, linemen, plant superintendents, construction engineers. Packed with practical facts and useful reference data on generators and motors, outside distribution, selection, installation and operation of commercial electrical apparatus and materials, electrical fundamentals, wiring for light and power, etc. 1051 pages, pocket size, flexible, fully illustrated, \$4.00

3. Kushlan's HANDBOOK OF INDUSTRIAL ELECTRICITY

Expressly planned as a reference book for electricians engaged in installing and maintaining electrical equipment in residential, commercial and industrial buildings and outdoors. Covers wiring, inspection, maintenance. Special attention given to estimating, reading plans and diagrams, classifying equipment, etc. Beside the standard indoor and outdoor installations, includes information on radio circuits, electric heat application, wiring of gas-driven vehicles, etc. 525 pages, 4 1/2 x 7, flexible, fully illustrated, \$4.00

Do you want to give Christmas gifts combining real utility with a distinctive personal touch? Would you like to have your name on books that you want to add to your own library? Then take advantage of this free stamping offer. Send the coupon today. (Proper remittance should be enclosed with order and, of course, stamped copies are not returnable.)

HOLIDAY OFFER COUPON

McGraw-Hill Book Co., Inc.
330 W. 42nd St., New York.
Send me the books checked below with free gold stamping of name on front cover. I enclose remittance to cover and understand that stamped books are not returnable. (This offer expires January 1, 1933.)

- ☐ Abbott—National Electrical Code Handbook, \$3.
☐ Croft—American Electricians' Handbook, \$4.
☐ Kushlan—Handbook of Industrial Electricity, \$4.

(Name to be stamped. Please print.)

Name

Address

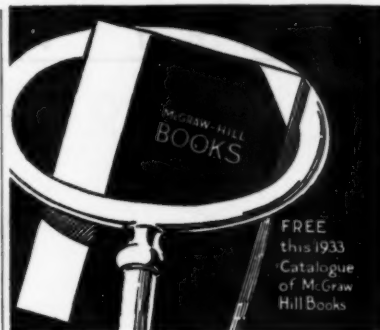
City and State..... E.C. 12-32

when he was short on cash. With the installation all figured out, and a definite monthly saving to the customer assured, the contractor faced the problem of financing the job. The wholesaler came into the picture because the equipment would amount to one half the installation price, and between the customer, the contractor and the wholesaler it was decided that the customer could pay for the job monthly by paying the contractor and the wholesaler fifty dollars a month each, which is approximately the saving in his current bills.

WE recently found a Pittsburgh contractor sweating over plans for work in a night club. The proprietor wanted a ventilating system that would remove tobacco smoke without removing heat at the same time. He wanted a system to deaden noise of talkative customers and at the same time one that would enable the songs of entertainers to carry throughout the place. Oh yes, and one more requirement—The job must be done at very little expense. Now where is the guy that said it didn't take brains to be a contractor?

TO stimulate remodeling work Hummell Bros. of Jeanette, Pa., and Frank Yost of Greensburg, Pa., have men out canvassing. They take lamps, fuses and cords with them and while selling these they look for opportunities in additional wiring work. The men are paid on a commission basis for sales and work orders. While this plan is not recommended as a quick way to get rich, it is stimulating business somewhat. New contacts are made with prospects and people are made to think about their electrical needs. Then too, men who would otherwise be idle are given employment. Charles Menge of Jersey City used a plan similar to this and found that new customers came to his place as late as six months after a solicitor had called.

R C. Lindig, Peoria, Ill., contractor, believes in some reciprocity as a means of getting business. Recently a large clothing store in town contemplated remodeling. Lindig called on the people verified their intentions, and cited examples of the work he has been doing for other people in town. He asked the management of the store to look back in their books for a few years back to see how much business he has been doing with them and to see how much business he has gotten from them and decide if that was evidence enough that he was entitled to the job. Three days later he was called and informed he would do the electrical work that was to be done. In plain words as he puts it "sell your services to the people where you have been spending your money."



More than a Catalogue! IT'S A KEY to the college for the man who works

Today, many business men face unfamiliar situations . . . new jobs . . . new duties in addition. But, alert and resourceful, they remain undismayed. They call on the aid of experts to help them in studying these problems.

You, too, can command the aid of these experts. Send for this 1933 Catalogue of McGraw-Hill Books. A priceless aid in time of trouble—yet it doesn't cost you a penny!

In its 250 pages, you'll find brief, interesting descriptions of authoritative books on over 2,000 subjects . . . Informing, stimulating books by 1500 of the leading minds in business, industry and research.

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McGraw-Hill Book Co., Inc.,
330 West 42nd Street,
New York City.

Please send me, free of charge, your 1933 Catalogue of McGraw-Hill Books. I want to know more about: (Name subjects of most interest to you).

Name.....

Address.....

NEWS MANUFACTURERS

A DEPARTMENT FOR THE ANNOUNCEMENT OF ACTIVITIES OF MANUFACTURERS THAT ARE OF INTEREST TO CONTRACTORS, SUCH AS CHANGES IN EXECUTIVE PERSONNEL, BRANCH OFFICES, NEW PRODUCTS, ETC.

WESTINGHOUSE ELECTS TWO VICE-PRESIDENTS

Following the meeting of the board of directors of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., held in New York, President F. A. Merrick announced the election of two vice-presidents.

C. E. Stephens, formerly commercial vice-president, with headquarters in New York, was elected vice-president. He will remain in New York.

N. G. Symonds, formerly commercial vice-president at Chicago, was elected vice-president in charge of sales. His headquarters will be at the general offices of the company in East Pittsburgh, and will report directly to J. S. Tritle, vice-president and general manager.

SALES HELPS ON RESIDENTIAL YARD LIGHTING

A sales booklet entitled "A Program to Sell Residential Yard Lighting" has just been published by Benjamin Electric Mfg. Co., Des Plaines, Ill. In addition to giving sales helps on how to develop the market for protective and decorative lighting, the booklet contains specimens of sales helps for the contractor and the dealer.

NEW CATALOG ON DAYTON COG-BELT DRIVES

The Dayton Rubber Manufacturing Co., Dayton, Ohio, is distributing a new condensed catalog on Dayton cog-belt drives, known as Catalog No. 105 Condensed.

Complete prices and dimensions are included in this catalog, as well as simplified data for the calculation of special drives where required. It provides complete data for office use

as well as a convenient handbook on V-Belt drives for machinery representatives, distributor salesmen, and others who need compact information in their daily work.

Copies of this new catalog will be mailed upon request.

MARBLE-CARD ELECTRIC TO EXPAND ACTIVITIES

Marble-Card Electric Co., Gladstone, Mich., manufacturers of electric motors, will expand its activities in 1933, and during the depression has retooled its factory for larger production. With greater facilities now available, wider distribution will be sought.

R. H. Garrison, former general sales manager for Universal Motor Co., Oshkosh, Wis., has been appointed vice-president in charge of merchandise.

A 32-page bulletin No. 1002 listing and illustrating a complete line of malleable iron explosion resisting fittings has just been published by Appleton Electric Co., Chicago, Ill. These fittings are for use in hazardous locations.

"Electric Equipment for Woodworking," a booklet designed to aid the machine manufacturer in his choice of electric equipment for high-speed drives, has been published by the General Electric Company, Schenectady, N. Y. In addition to the discussion on motors, frequency converters, and alternators, considerable space is devoted to suitable control for starting, stopping, reversing, and pole changing, as well as for supplying adequate undervoltage and overload protection. Bulletin is No. GEA-1586, superseding 41521B.

Insure Future Profits With GREENLEE TOOLS

YOU must be able to compete on an even basis with other contractors, if business is to be had at a profit. And there is no better way to do this than by having proper equipment. Many have learned that proper equipment includes the Greenlee Tools mentioned below. You will agree with them, too, if you will but investigate.



Hydraulic Conduit Benders

Greenlee Hydraulic Conduit Benders insure profits because they bend conduit quicker and easier than by other methods. In addition, they make smooth, even bends, eliminating many fittings and making it easy to pull in wire. They are easy to take to the job, too, because they are portable.



Knockout Tools

Greenlee Knockout Punches and Cutters make it easy to enlarge holes in switch boxes, cabinets, etc. They form clean-cut holes quickly and accurately, without any reaming or filing.

Other Tools

Hydraulic Pipe Pushers

Joist Bore

Electrician Bits

Bit Extensions

Let Us Send Complete Information

GREENLEE TOOL CO. ROCKFORD ILLINOIS

GREENLEE TOOL CO.
ROCKFORD, ILLINOIS

Please send complete information on the following:

- ☐ Conduit Benders
☐ Knockout Tools

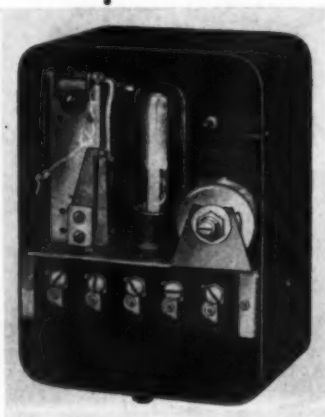
Name _____
Street _____
City _____
State _____
My jobber is _____

12-32

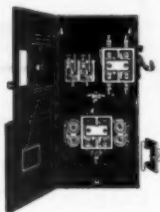
New Electrical Products



National Electric Products Corp., Pittsburgh, Pa., announces Xtensionduct, to take the place of flexible cord wiring. Xtensionduct is a metal duct for extending existing outlets neatly and simply, in an almost invisible manner. It is designed for extension of a circuit only, and therefore takes two No. 14 wires which are laid in the duct and the cover snapped on. The duct is finished in a neutral brown or mahogany and can be changed easily to any color by one coat of quick drying enamel.



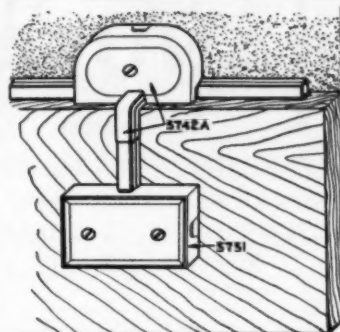
A low-priced photoelectric relay has been announced by General Electric Co., Schenectady, N. Y., designated as the CR7505-K1. Relay consists of phototube, Photron amplifying tube, sensitive relay, adjustable potentiometer and associated apparatus, all mounted on a steel base. Unit is complete in itself without an enclosing case, but a drawn shell enclosing case is provided to allow mounting on a vertical support. Base assembly may be removed from case by unfastening two screws, although unit may be wired and adjusted without taking it from case. Cover with one opening for phototube and another for potentiometer adjustment is provided with unit. Cover is fastened to case by means of binding screw and dowel pins and easily removed. Cover may be replaced by one with an optical system. Where interrupting capacity of sensitive relay contact is not sufficient to handle device to be controlled, a small contactor or magnetic switch may be interposed between sensitive relay and controlled device.



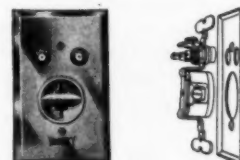
Accessible fuse meter service switch with range circuit and with or without lighting circuit is announced by The Wadsworth Electric Mfg. Co., Covington, Ky. Unit is complete in one cabinet embodying a 60 amp. (switch meter fuse type sequence) accessible fuse switch in upper compartment; range circuit and with or without lighting circuit in lower compartment. Cabinet has two doors permitting sealing of upper compartment with main switch and making branch circuit fuses accessible in lower compartment by opening lower door. Upper door has a slide door arrangement permitting access to main fuses when switch is in "off" position. Range circuit is provided with safe pull cover for inserting or removing of fuses. Lower door has on inside card holder with card for designating circuits. Cabinets are finished in baked black enamel.



A Mazda "detector" lamp for Christmas tree lighting which glows after burning out in order to assist in locating the burned-out light is announced by Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa. This is made in an F-6½ bulb with regular miniature screw base and is designed for series burning in strings of 8 sockets each and on 100-25-volt circuits either a.c. or d.c., and is available in red, green, blue, orange and white. It has a larger bulb and is of new flame shape design. The detector feature is based on a neon glow, each lamp containing a small quantity of neon gas. A portion of glass bulb near the base of lamp is left uncoated permitting ready detection of glow.



An adjustable junction box (5742-A) in addition to its series of straight line or baseboard fittings, is announced by The Wiremold Co., Hartford, Conn. Fitting is designed to facilitate installations where circuits must be picked up from existing outlets located in baseboards. Fitting has an elbow adjustable to various thicknesses of baseboard by means of which Wiremold may be closely fitted to any baseboard. With Wiremold knock-out arrangement combinations of right or left hand twisted elbow, twisted tee or cross connections may be made.



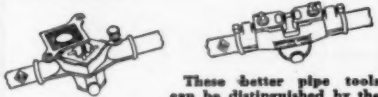
Yaxley Manufacturing Co., Division of P. R. Mallory & Co., Indianapolis, Ind., announces No. 133 radio convenience outlet in brass or No. 133-B in Bakelite. Unit has compact assembly of antenna and ground with single a.c. outlet. Two tip plugs are included with each outlet.



Knox Porcelain Corporation, Knoxville, Tenn., announces its amateur broadcaster insulator No. 402, for aeriels or broadcasting sets. Unit has nickel plated brass terminals. Dimensions are base oblong 1x1½ in., and 1½ in. high. It comes in two colors—brown or blue.

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By reading these pages you will acquaint yourself with what is newest and best in electrical supplies and equipment. When communicating with an advertiser mention

Electrical Contracting

GEORGE BAILY

George Baily, assistant sales manager of the Westinghouse merchandising department, died of cerebral hemorrhage on October 29, while attending the Pitt-Notre Dame football game in Pittsburgh.

Mr. Baily was born in Baltimore, Md., attended Lehigh University, graduating in 1904. Following his graduation he came to Pittsburgh and entered the construction business. Later he moved to Cincinnati, where he entered the employ of the Westinghouse Electric & Mfg. Co., in its Cincinnati sales office. After he returned from the war, he returned to Cincinnati, from where he was sent to Pittsburgh and then to New York. From New York he was transferred to the Pacific Coast, and then returned east, making his headquarters in Mansfield, Ohio.

ACQUIRES MANUFACTURING RIGHTS FOR NORTHWESTERN MOTORS

The Harnischfeger Corporation, Milwaukee, Wis., has acquired the manufacturing rights for the entire line of Northwestern motors and generators formerly produced by the Northwestern Manufacturing Co. of Milwaukee.

The Northwestern line includes a wide range of motors in capacities from one-half to 150 horsepower and covering types for all current characteristics and for the most diverse applications.

The Youngstown Sheet and Tube Co., Youngstown, Ohio, has recently published a small hand-book, entitled "What We Make." This booklet lists the products manufactured by the company, in addition to descriptions, photographs and sizes of the different products.

The Jefferson Electric Co., Bellwood Ill., has just published a 4-page illustrated folder describing the Jefferson Ozonator. As the folder indicated, this device has an unusually wide application for purifying and vitalizing air.

A new 4-page pamphlet describing Sangamo synchronous motors and electrical wound Model B time-switches has just been published by the Sangamo Electric Co., Springfield, Ill.

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1 Hanger without Porcelain Bushing. Spring steel; stronger, quicker, more compactly arranged.

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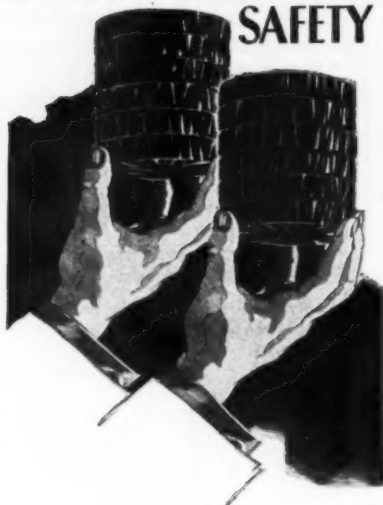
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Here then is a case where you will not agree that six of one *are* as good as half a dozen of the other. With a difference so marked you are bound to choose Panther or Dragon Tape in the end. Why not make that choice to start with?



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Division of
The Okonite Company
Passaic, N. J.

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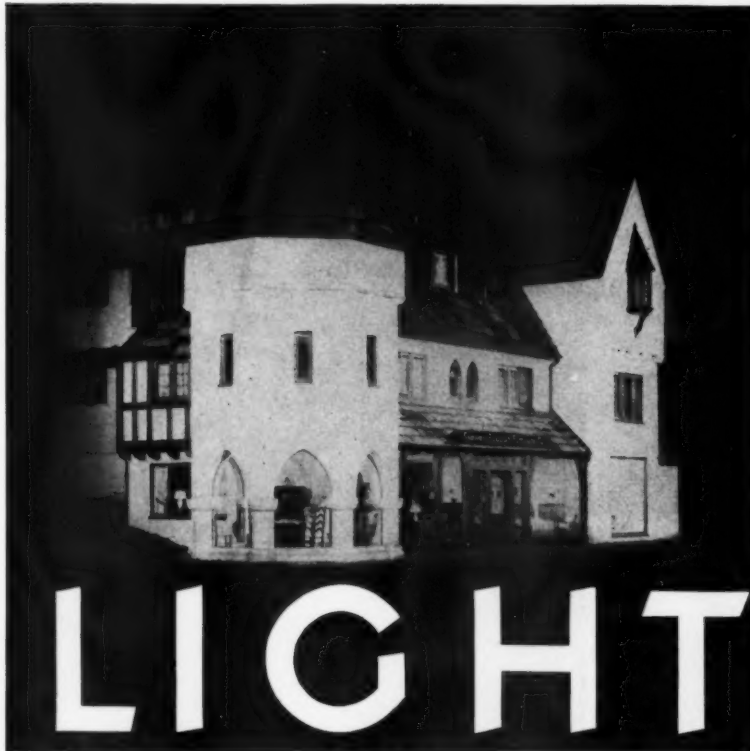
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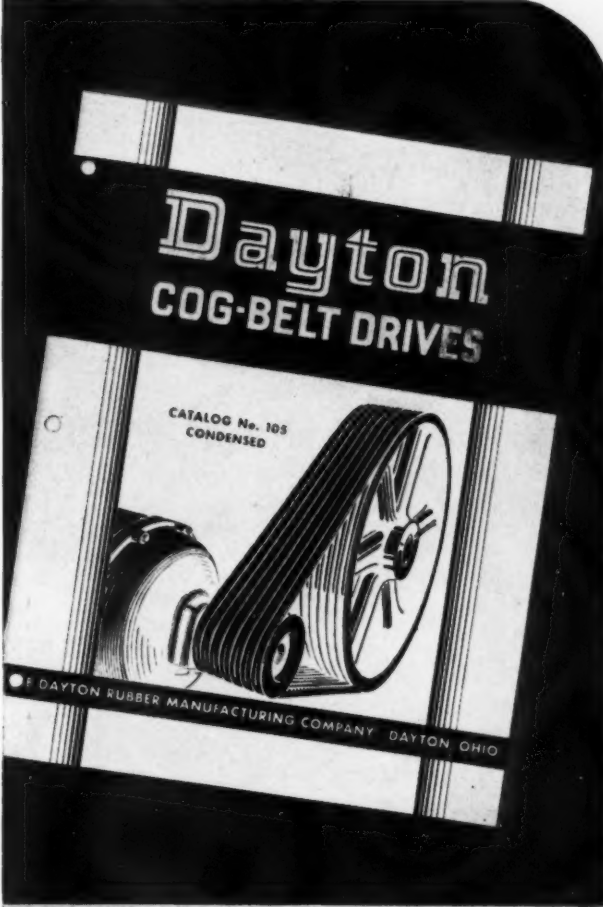
In addition it describes the Dayton Cog-Belt—shows how it is built, why it is *different* from other V-Belts, and why it is *better*. There are illustrations typical of the thousands of Dayton Cog-Belt Drive installations now in use throughout industry . . . proof of the tremendous scope of the uses for this improved Drive.

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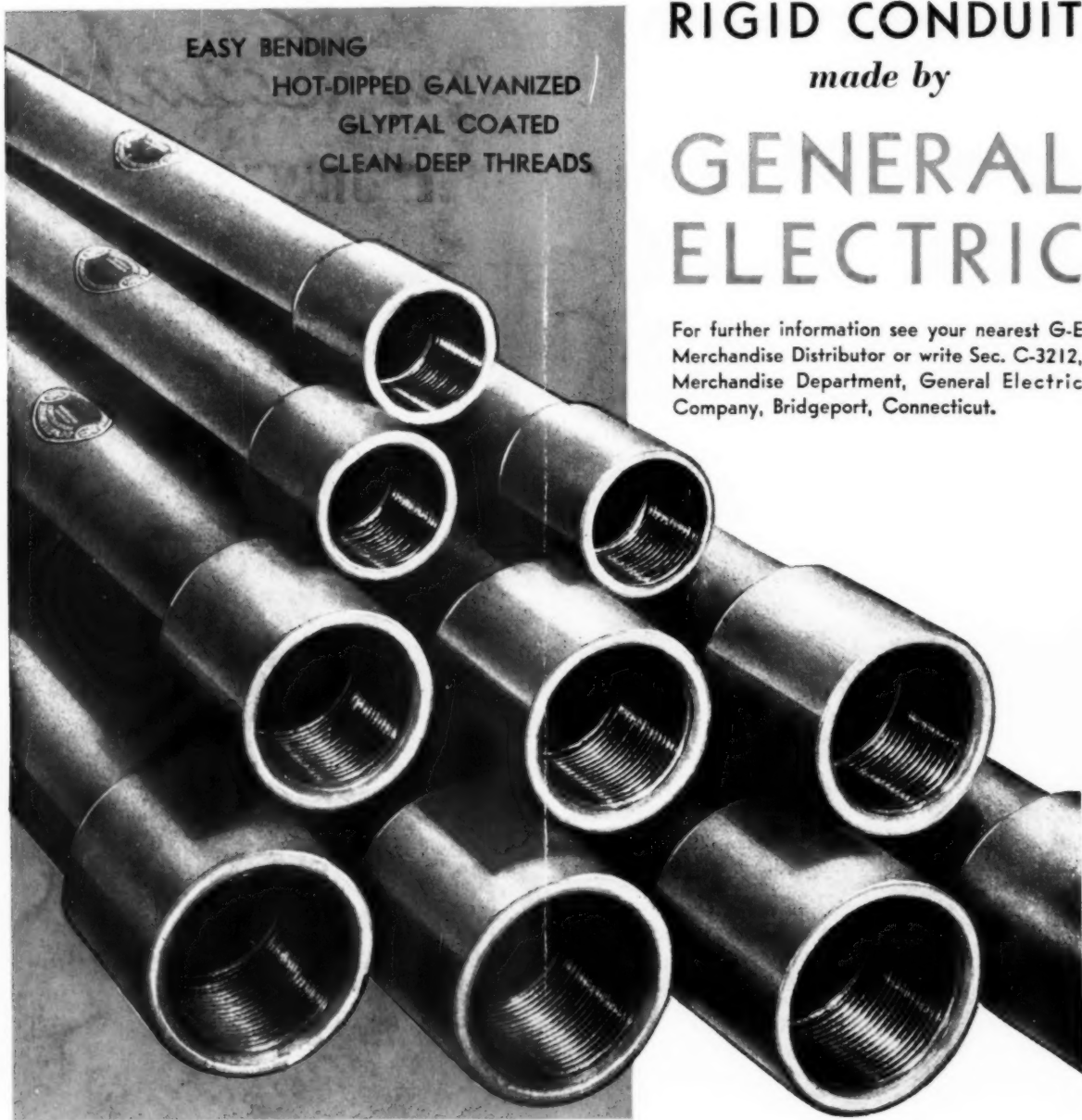
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